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No. 4

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### NOTICE TO READERS.

This Journal is devoted to the advancement of  
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## MEETINGS OF STATE PHARMACEUTICAL ASSOCIATIONS.

STATE.	TIME.	PLACE.	LOCAL SECRETARY.
Alabama,	May 11,	Birmingham,	G. M. Baine.
Arkansas,	April,	Little Rock,	
Georgia,	April 12,	Savannah,	W. S. Parks, Atlanta.
Illinois,	June 8,	Rockford,	H. C. Porter.
Indiana,	June 8,	Lafayette,	D. Holt.
Kansas,	June 9,	Emporia,	D. W. Morris.
Kentucky,	May 6,	Bowling Green,	Wm. Turner.
Louisiana,	April 21,	New Orleans,	Mrs. E. Rudolph.
Massachusetts,	June 2,	Boston,	Henry Canning.
Maryland,	June 1,	Annapolis,	L. Byers, Hagerstown.
Minnesota,	June 9,	Minneapolis,	
Missouri,	June 15,	Sweet Springs,	G. H. C. Klie, St. Louis.
Mississippi,	May 13,	Jackson,	H. F. West, Fayette.
Nebraska,	May 11,	Omaha,	C. J. Danbach.
New Jersey,	May 10,	Newark,	R. H. Vansant, Trenton.
New York,	May 8,	Rochester,	C. H. Haskin.
Ohio,	June 2,	Springfield,	Chas. Ludlow.
Pennsylvania,	June 8,	Lebanon,	Geo. R. Ross.
Tennessee,	May 12,	Knoxville,	G. A. Eisenlohr.
Texas,	April 27,	Dallas,	Edgar Warfield.
Virginia,	May 11,	Alexandria,	C. Menkemeller.
West Virginia,	June 8,	Wheeling,	

The Ohio Association offers two prizes for the best papers read, viz.: a Troemner prescription balance worth \$25.00, and a combination suppository mould. The Texas Association is expected to remain in session four days.

**BOTANY.**—First meeting of the class for organization in the Materia Medica Lecture room, Philadelphia College Pharmacy, April 21st, 4 P. M.

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# THE AMERICAN JOURNAL OF PHARMACY.

APRIL, 1886.

## XANTHORRHIZA APIIFOLIA, L'HERITIER.

By SAMUEL S. JONES, PH. G.

(Abstract of an Inaugural Essay.)

The rhizome reduced to a No. 80 powder contained 10.64 per cent. moisture and yielded 1.70 per cent. ash, of the latter 0.90 was soluble in water, 0.62 soluble in HCl, and 0.18 insoluble in either; it contained potassium, calcium, magnesium and iron, with carbonic, sulphuric and phosphoric acids.

The proximate analysis gave the following results:

Soluble in petroleum spirit.....	015	
Volatile oil.....		009
Resin soluble in absolute alcohol.....		006
Soluble in stronger ether.....	1.300	
Resin with traces of alkaloid.....		1.300
Soluble in absolute alcohol.....	1.320	
Resin soluble in chloroform, benzol, etc.....		060
Alkaloids.....		280
Other organic compounds.....		300
Inorganic matter.....		080
Soluble in distilled water.....	6.100	
Mucilage and albumen.....		070
Dextrin, etc.....		130
Glucose.....		250
Saccharose.....		990
Other organic matter.....		3.940
Inorganic matter.....		720
Soluble in solution of sodium hydrate (.2 per cent.)....	4.250	
Mucilage and albumen.....		2.190
Other organic matter.....		1.460
Inorganic matter.....		600
Soluble in dilute hydrochloric acid (1 per cent.).....	8.250	
Starch and other compounds.....		7.830
Inorganic matter.....		420
Loss by treatment with chlorine water.....	12.345	12.345
Residue remaining.....	65.180	65.180
Loss.....	1.240	1.240
	100 —	100 —

The alcoholic resin was purified by repeated solution in alcohol and precipitation with water, when it had the consistence of Burgundy pitch, melted at 74° C. and dissolved at 50° C. in all proportions of absolute alcohol. At 15.5° C. one part of resin dissolved in 23 parts alcohol, 2.6 parts chloroform, 10.5 parts benzol, 78 parts carbon disulphide, 1200 parts petroleum spirit, and in 6 parts solution of potassa (5 per cent.). In contact with camphor, a rather soft mass is produced, which becomes harder on standing. The resin has a neutral reaction; its taste is rather pungent, with a slight bitterness, probably due to adhering alkaloid.

The alcoholic extract freed from resin gave with potassio-mercuric iodide a precipitate equivalent to 0.28 per cent. of alkaloids. Precipitated by acids the following amounts of berberine were obtained: with picric acid .14, with sulphuric acid .09, with hydrochloric acid .10 per cent. After various methods had been tried for the separation of the alkaloids, the following results were obtained: The alcoholic tincture of 350 gms. of the drug was concentrated to 200 C c., mixed with excess of sulphuric acid, and set aside for twelve hours at between -2° and -3° C. The filtrate from the impure berberine sulphate was freed from alcohol by evaporation, poured into water to separate resin, the filtrate precipitated with ammonia and the precipitate purified by washing, solution in sulphuric acid, precipitation by ammonia, solution in alcohol, treatment with animal charcoal, and evaporating. The residue treated with chloroform gave a resin-like mass which could not be crystallized, and which, dissolved in acidulated water, gave alkaloidal reactions with platonic chloride, gold chloride and potassio-mercuric iodide, and the aqueous solution, evaporated, did not give the characteristic color reactions of berberine with Froehde's reagent, sulphuric acid, sulphuric and nitric acids, nitric acid or chlorine water with hydrochloric acid. These results show the absence of berberine and the presence of a second alkaloid in the solution obtained as above.

The aqueous extraction of the drug, on being mixed with 2 parts of alcohol, precipitated mucilage and albumen; after concentration and precipitation with 4 parts of alcohol, dextrin, etc., was obtained; glucose was estimated by Fehling's solution, and saccharose by the same test-liquid, after boiling the liquid with hydrochloric acid and deducting the glucose previously found.

## FOLIA PIMENTÆ.

BY WILLIAM WARNER ABELL, Ph.G.

(Abstract of an Inaugural Essay.)

The leaves of *Eugenia Pimenta* are petiolate and vary somewhat in shape and size, but are usually about four inches long, elliptical, entire, blunt or obtusely pointed, veined, of a shining green color, and have an astringent and aromatic taste.

On distilling 448 gm. of the ground leaves with water for 36 hours, the distillate treated with ether yielded only half a fluidrachm, or rather less than  $\frac{1}{2}$  per cent. of volatile oil, resembling that of *Myrcia acris*. The estimation of tannin was attempted by precipitating the concentrated infusion with basic lead acetate, decomposing the precipitate with hydrosulphuric acid and evaporating, which gave 0.417 per cent. The ash amounted to 11.25 per cent, one-eighth of which was soluble in water.

The following pharmaceutical preparations were made:—

*Abstractum Pimentæ foliorum.* Prepared by the pharmacopœial process for abstracts; it is of a light-green color and has a strong odor of pimenta.

*Extractum Pimentæ foliorum fluidum.* Experiments made with alcohol, alcohol (2 parts) and water (1 part), and with diluted alcohol, with and without the addition of glycerin, lead to the conclusion that diluted alcohol is the best menstruum, yielding a dark-colored, almost black fluid extract, having a strong, pungent taste of pimenta and fully representing the virtues of the leaves.

*Extractum Pimentæ foliorum.* Using alcohol as the menstruum, 7.5 per cent. of a dark-colored, oily extract was obtained; and with diluted alcohol, 12.5 per cent. The latter was of a pilular consistence, dark brown, and had the strong odor and taste of the drug.

*Tinctura Pimentæ foliorum.* Strength: 12 in 100. Menstruum used: alcohol 85 and water 15 parts. The reason for choosing a stronger alcoholic menstruum for the tincture than for the fluid extract is not stated.

*Trochisci Pimentæ foliorum*, containing 1 gram of the extract in 30 troches, have a fine aromatic and astringent taste.

---

**Populin**, a bitter principle obtained from the bark of white poplar, or "quaking aspen," and other species of *Populus*, is said to act like a charm in painful micturition and scalding. The dose ranges from two to four grains.—*Med. World.*

## SYRUPUS AURANTII.

BY GEORGE M. BERINGER, PH. G.

(Read at the Pharmaceutical Meeting, March 16th.)

The U. S. Pharmacopœia directs that syrup of orange should be made from the sweet orange peel, using only the outer layer (epiderm) containing the oil cells, which should be carefully grated or cut with a sharp knife from the inner white layer of parenchyma. The official formula directs that five (5) parts of the epiderm thus procured should be macerated for seven days with five (5) parts of alcohol, and then express the liquid; the expressed liquid then to be rubbed up with one (1) part precipitated phosphate of calcium and thirty (30) parts of water gradually added, and then filtered, adding enough water through the filter to make the liquid weigh forty (40) parts, in which dissolve sixty (60) parts of sugar.

Carefully following these directions and using a tincture-press, I have never been able to procure more than from one-and-a-half to two parts of liquid from the five parts of alcohol used, the remainder of the menstruum being absorbed and retained by the orange peel. That this portion of one and a half parts or so, expressed, should represent all the flavoring or virtue of five parts of orange peel, seems, at the least, to be ridiculous, and that the portion from three to three and one-half parts, retained, should not be recovered, could certainly not have been the intention of the revisers of our national standard. If expression is the process of extraction to be used, then the peel should, after the first expression, be again macerated with 3 parts of alcohol and a second time expressed.

Maceration, followed by percolation, answers all the requirements of the Pharmacopœia. I would suggest the following modification of the official formula:

Take of sweet orange peel, grated or cut from the inner white layer, five parts (5); alcohol, a sufficient quantity; precipitated phosphate of calcium, one part (1); sugar, sixty parts (60); water, a sufficient quantity to make one hundred parts. Macerate the orange peel in five (5) parts of alcohol for seven days, then pack in a percolator, and allow the percolation to proceed slowly. Reserve the first two parts that come through, then add more alcohol and continue the percolation till six (6) parts more are obtained. Evaporate this, at a temperature not exceeding 120° F., to three (3) parts, and add to the reserved portion. Rub this up with the precipitated phosphate of calcium and

then with thirty (30) parts of water gradually added and filter, adding enough water through the filter to make the liquid weigh forty (40) parts, in which dissolve the sugar by agitation.

The writer is aware that the syrup of orange thus made requires considerable time and trouble, for the separation of the epiderm from the white layer is rather a tedious operation. I am also aware that many pharmacists—I almost said *most*—prepare this syrup from the fluid extract supplied by manufacturers. The fluid extract made from the ground peel yields a syrup which is anything but officinal. In the interest of accurate pharmacy (for pharmacy should be as exact a science as mathematics), this simple preparation should be as carefully prepared as confection of senna, blue mass, or any of the more difficult pharmaceutical preparations.

It has been proposed to use for this syrup the peel carefully grated from the fruit in place of the dried peel. I exhibit, herewith, two samples of syrup thus made, the one merely substituting an equal amount of the fresh peel for the dried of the officinal formula. In the other, an allowance is made for the moisture which, in several determinations, amounted to seventy per cent. on air drying. Consequently  $16\frac{2}{3}$  parts were used in place of 5 parts for the officinal syrup.

## GLEANINGS FROM FOREIGN JOURNALS.

BY GEORGE H. OCHSE, Ph. G.

*Incompatibility of Antipyrin and Spirit of Nitrous Ether.*—According to Eules sweet spirit of nitre and antipyrin are incompatible owing to the formation of an aniline.—*Pharmaceutische Rundschau*, xxii, p. 70.

*Preservation of Raspberry Juice.*—Raspberry juice can be preserved by adding 20 gms. of salicylic acid to 100 liters of juice, also by the addition of 15 per cent. of 96 per cent. alcohol. Salicylic acid is preferable to alcohol for several reasons. When the juice is preserved with alcohol it soon loses its bright red color, turning violet, and gradually acquires a strong ethereal odor, losing in this way the natural aroma, whilst juice preserved with salicylic acid retains its natural color and odor and yields a clear syrup when boiled with sugar.—*Pharm. Rundschau*, xii, p. 82.

*Stable Corrosive Sublimate Soap.*—Unna in an article on medicinal soaps stated that a stable soap of corrosive sublimate would be of great value to physicians. Owing to the rapidity with which mer-

curic chloride is decomposed by soap it is very difficult to make a soap which would answer the purpose. According to Geissler a stable soap can be made by mixing corrosive sublimate with soap containing an excess of fatty acid (not fat). If the soap contains an excess of alkali dark spots appear and gradually get larger until the soap turns black and lastly silver-gray. This does not occur in soap made as Geissler suggests, hence, color can be considered a criterion of efficacy. Prof. Johne experimented with a 1 per cent. corrosive sublimate soap and found it to be a powerful disinfectant.

*Poisoning by Benzin.*—An adult took 12–13 gms. of benzin (benzol?) in mistake for brandy. Ten or fifteen minutes after taking it the patient became insensible and died 17½ hours afterward from asphyxia.—*Pharm. Rundschau*, xii, p. 110.

*To generate a steady stream of Laughing Gas.*—Kaemmerer proceeds as follows: In a Woulff bottle are placed some strips of copper, and the bottle is filled about one-third full with a cold saturated solution of nitrate of sodium, to which concentrated sulphuric acid is very gradually added. The flow of gas is regulated by the quantity of sulphuric acid added, care being taken not to have the mixture too warm.—*Pharm. Rundschau*, xii, p. 110.

*Novel use for Paraffin.*—Paraffin dissolves in ether and ethereal oils, but not in alcohol. Coltelloni takes advantage of this in distilling alcohol. The vapors are passed through molten paraffin before condensing, which takes up the fusel oil, and pure alcohol condenses.—*Pharm. Rundschau*, xii, p. 131.

*Diluent for Exsiccated Narcotic Extracts.*—Soluble starch, made by boiling 1000 parts of potato starch with 5000 parts of water and 20 parts of oxalic acid until the mixture becomes clear, then neutralizing with chalk, is recommended as a diluent for narcotic extracts. Powdered soluble starch resembles gum arabic, is soluble in water and contains but a trace of glucose.—*Pharm. Rundschau*, xii, p. 89.

According to Hoffmann, borax precipitates morphine in long acicular crystals. The borax solution is added until the morphine solution contains from 3 to 4 per cent. of borax—after 20–25 minutes the crystals of morphine can be separated, washed and weighed—*Pharm. Rundschau*, xii, p. 69.

*Indelible inks.*—Richmond states that indelible inks which are not affected by acids, can be made as follows: *Dark-blue*—3 parts ferro-

cyanide of potassium, 2 parts concentrated aqua ammoniæ, 2 parts tartaric acid and 240 parts of water are mixed, the solution filtered and 160 parts ammonio-citrate of iron, 40 parts aqua ammoniæ, 8 parts aniline-blue and 70 parts of gum arabic are added. *Black ink* is made by adding 20 parts of pyrogallie acid to the above. These inks being non-corrosive, can be used with an ordinary pen.—*Phar. Centralhalle*, xxvii, p. 74.

*Artificial Vanillin* is prepared in Milan from olivil (the resin obtained from the olive tree) by treating an alkaline solution of the resin with potassium permanganate. When the reaction ceases, an excess of sulphuric acid is added. The vanillin thus formed is extracted by steam or by shaking with ether.—*Phar. Centralhalle*, xxvii, p. 74.

*Hopeine*.—Hopeine an alkaloid (?) discovered by Williamson in uncultivated American hops, and recommended by him as a substitute for morphine and quinine, has been manufactured by the Concentrated Produce Co. (limited), and Christy, both of London. The product sent out by the former has been examined by Petit, Ladenburg and Müller and found to be an aromatised morphine. Bardet states that the crystalline forms of hopeine and morphine are identical. Hopeine gives the same reactions as morphine when treated with tannin, picric acid and mercuric chloride. The hop odor is not characteristic of the alkaloid; when an acid solution is precipitated with ammonia the precipitate is destitute of odor. Gebe & Co. were unable to discover any hopeine in German hops.—*Pharmaceutische Post*, xix, p. 138.

*Germanium a new element*.—Clemens Winkler discovered in argyrodite—a silver ore—a new element resembling arsenic in color and lustre, yet less volatile than antimony; when sublimed, it yields crystals totally different from antimony. Pure germanium sulphide is a snow-white mass, soluble in ammonia. Germanium chloride is more volatile than antimony chloride, and yields a white precipitate with sulphuretted hydrogen in acidified solution.—*Pharmaceutische Post*, xix, p. 140.

*Pulverization of Boracic Acid* is readily accomplished by agitating a hot saturated solution with an egg-beater until cold. When the solution is cold small microscopic crystals will be found at the bottom of the vessel; these are pressed between folds of filtering-paper, and while yet damp triturated in a mortar.—*L'Union Pharmaceutique*, xxvii, p. 53.

*Unguentum Diachylon.*—From the large number of formulas for ointments containing lanolin as the base, which have been published in German journals, the following for diachylon ointment are selected as examples:

1. Lead plaster, 50; olive oil, 20; lanolin, 30. Mix.
2. Lead plaster, 45; lanolin, 45; lard, 10. Mix.

## MATERIA MEDICA OF THE NEW MEXICAN PHARMACOPŒIA.

BY THE EDITOR.

(Concluded from page 127.)

*Trompetilla* is the name given to *Bouvardia angustifolia*, *B. hirtella*, *B. Jacquini*, *Kunth*, and other indigenous species of *Bouvardia* (*Rubiaceæ*). The decoction of the leaves is popularly believed to be a cure for hydrophobia; but this property has not been confirmed by clinical observation. (See also *AMER. JOUR. PHAR.*, 1874, p. 51.)

*Valeriana de México*, *Valeriana mexicana*, *De Cand.*; *Valeriana-cææ*; in the Mexican valley. The root is met with in sections or fleshy disks, about 4 Cm. or more in diameter, or in voluminous pieces; externally yellowish brown, internally yellowish; odor strong, unpleasant; taste bitter, somewhat acrid. It contains sufficient valerianic acid to be economically prepared from the root, which is used as a substitute for the European valerian in doses of 1 to 5 gm.

*Venenillo*, *Asclepias linearis*, *Cavanilles*; *Asclepiadaceæ*; in the Mexican valley. The milk juice is a violent and dangerous cathartic. The seed hairs, impregnated with a solution of ferric chloride and well dried, are used as a hæmostatic.

*Violeta del país*, *Sida triloba*, *Cavanilles*, *Malvaceæ*. The flowers are emollient.

*Yedra* (*Hiedra*) *terrestre*. This name belongs properly to the European *Glechoma hederacea*, *Lin.*; but in Mexico is also applied to the following plants, having very different properties: *Pharbitis violacea*, *Boj.* (*manto de la Virgen*), *Hydrocotyle americana*, *Lin.* (*sombrerillo de agua*), *Cobœa scandens*, *Cav.* (*hiedra morada*), and more commonly to *Sida triloba*, *Cav.*, and a species of *Malva*.

*Yerbabuena* is *Mentha viridis*, *Lin.*

*Yerbabuena piperita*, *Mentha piperita*, *Lin.* Analogous properties are contained in *Hedeoma piperita*, *Bentham*, which is frequent in the Mexican valley.

Yerba del alacran, *Plumbago scandens*, *Lin.*; *Plumbaginaceæ*; in hot and moist localities. The leaves, externally applied, are caustic, and taken internally, emetic, dangerous. The root is caustic and purgative.

Yerba del ángel, *Eupatorium Collinii*, *De Cand.*, *E. sanctum*, *Flor. Mex. ined.*; in the mountains of Guadalupe Hidalgo. The leaves are popularly used in atonic diarrhœa and as an antiperiodic, and are fraudulently used in the manufacture of beer.

Yerba de las ánimas, *Helenium autumnale*, *Lin.* The flowers and fruit are errhine, and have been used as a substitute for arnica. (See also AMER. JOUR. PHAR., 1872, pp. 308, 522, and 1874, p. 221.) The same common name is also given to *Ipomœa orizabensis*, *Ledanois*.

Yerba del burro is an undetermined species of *Spigelia*, the leaves and seeds of which are poisonous.

Yerba del cancer, *Lythrum alatum*, *Pursh*, *L. vulnerarium*, *Schrank*, *L. lanceolatum*, *Elliot*, and *L. album*, *Kunth* (*Lythraceæ*); also *Gomphrena procumbens*, *Fl. Mex. ined.* (*Amaranthaceæ*). The leaves of these plants, in cataplasms and in decoction, are vulnerary and are used in cancerous ulcers.

Yerba del carbonero, *Baccharis Alamani*, *De Cand.*, *B. multiflora*, *Humboldt et Bonpland*, *B. jalapensis*, *H. B.*, *B. heterophylla*, *H. B.*, and other indigenous species of *Baccharis* are diaphoretic, the infusion of the leaves being popularly used for the cure of catarrhs.

Yerba del clavo, *Juliana caryophyllata*, *La Llave*; *Zygophyllaceæ*; in Tlalpim, etc. The infusion of the leaves is antispasmodic.

Yerba de la cucaracha, a species of *Echites*; in Cuernavaca. The powder of the leaves and stem, mixed with sugar, is effectual for destroying cockroaches.

Yerba del cura, *Ternstroemia altamirania*, *Schiede*; in hot and damp regions. Baths made from the leaves are used against rheumatism and gout.

Yerba de la doncella, *Begonia gracilis*, *Kunth*, also *B. tuberosa* *Fl. Mex. ined.*, *Begoniaceæ*. The root is emetic and cathartic.

Yerba dulce, *Lippia graveolens*, *Kunth*, and *L. dulcis*, *Treviranus*; *Verbenaceæ*. The infusion is demulcent, pectoral and emmenagogue. (See also AMER. JOUR. PHAR., 1885, p. 333.)

Yerba de la golondrina, *Euphorbia maculata*, *Lin.*; in the Mexican valley, also in the United States. The juice is used for removing spots from the cornea, and the decoction as a lotion for skin dis-

*Unguentum Diachylon.*—From the large number of formulas for ointments containing lanolin as the base, which have been published in German journals, the following for diachylon ointment are selected as examples:

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(Concluded from page 127.)

*Trompetilla* is the name given to *Bouvardia angustifolia*, B. *hirtella*, B. *Jacquini*, *Kunth*, and other indigenous species of *Bouvardia* (*Rubiaceæ*). The decoction of the leaves is popularly believed to be a cure for hydrophobia; but this property has not been confirmed by clinical observation. (See also *AMER. JOUR. PHAR.*, 1874, p. 51.)

*Valeriana de México*, *Valeriana mexicana*, *De Cand.*; *Valerianaceæ*; in the Mexican valley. The root is met with in sections or fleshy disks, about 4 Cm. or more in diameter, or in voluminous pieces; externally yellowish brown, internally yellowish; odor strong, unpleasant; taste bitter, somewhat acrid. It contains sufficient valerianic acid to be economically prepared from the root, which is used as a substitute for the European valerian in doses of 1 to 5 gm.

*Venenillo*, *Asclepias linearis*, *Cavanilles*; *Asclepiadaceæ*; in the Mexican valley. The milk juice is a violent and dangerous cathartic. The seed hairs, impregnated with a solution of ferric chloride and well dried, are used as a hæmostatic.

*Violeta del país*, *Sida triloba*, *Cavanilles*, *Malvaceæ*. The flowers are emollient.

*Yedra* (*Hiedra*) *terrestre*. This name belongs properly to the European *Glechoma hederacea*, *Lin.*; but in Mexico is also applied to the following plants, having very different properties: *Pharbitis violacea*, *Boj.* (*manto de la Virgen*), *Hydrocotyle americana*, *Lin.* (*sombrerillo de agua*), *Cobœa scandens*, *Cav.* (*hiedra morada*), and more commonly to *Sida triloba*, *Cav.*, and a species of *Malva*.

*Yerbabuena* is *Mentha viridis*, *Lin.*

*Yerbabuena piperita*, *Mentha piperita*, *Lin.* Analogous properties are contained in *Hedeoma piperita*, *Bentham*, which is frequent in the Mexican valley.

Yerba del alacran, *Plumbago scandens*, *Lin.*; *Plumbaginaceæ*; in hot and moist localities. The leaves, externally applied, are caustic, and taken internally, emetic, dangerous. The root is caustic and purgative.

Yerba del ángel, *Eupatorium Collinii*, *De Cand.*, *E. sanctum*, *Flor. Mex. ined.*; in the mountains of Guadalupe Hidalgo. The leaves are popularly used in atonic diarrhœa and as an antiperiodic, and are fraudulently used in the manufacture of beer.

Yerba de las ánimas, *Helenium autumnale*, *Lin.* The flowers and fruit are errhine, and have been used as a substitute for arnica. (See also AMER. JOUR. PHAR., 1872, pp. 308, 522, and 1874, p. 221.) The same common name is also given to *Ipomœa orizabensis*, *Ledanois*.

Yerba del burro is an undetermined species of *Spigelia*, the leaves and seeds of which are poisonous.

Yerba del cancer, *Lythrum alatum*, *Pursh*, *L. vulnerarium*, *Schrank*, *L. lanceolatum*, *Elliot*, and *L. album*, *Kunth* (*Lythraceæ*); also *Gomphrena procumbens*, *Fl. Mex. ined.* (*Amaranthaceæ*). The leaves of these plants, in cataplasms and in decoction, are vulnerary and are used in cancerous ulcers.

Yerba del carbonero, *Baccharis Alamani*, *De Cand.*, *B. multiflora*, *Humboldt et Bonpland*, *B. jalapensis*, *H. B.*, *B. heterophylla*, *H. B.*, and other indigenous species of *Baccharis* are diaphoretic, the infusion of the leaves being popularly used for the cure of catarrhs.

Yerba del clavo, *Juliana caryophyllata*, *La Llave*; *Zygophyllaceæ*; in Tlalpam, etc. The infusion of the leaves is antispasmodic.

Yerba de la cucaracha, a species of *Echites*; in Cuernavaca. The powder of the leaves and stem, mixed with sugar, is effectual for destroying cockroaches.

Yerba del cura, *Ternstroemia altamirania*, *Schiede*; in hot and damp regions. Baths made from the leaves are used against rheumatism and gout.

Yerba de la doncella, *Begonia gracilis*, *Kunth*, also *B. tuberosa* *Fl. Mex. ined.*, *Begoniaceæ*. The root is emetic and cathartic.

Yerba dulce, *Lippia graveolens*, *Kunth*, and *L. dulcis*, *Treviranus*; *Verbenaceæ*. The infusion is demulcent, pectoral and emmenagogue. (See also AMER. JOUR. PHAR., 1885, p. 333.)

Yerba de la golondrina, *Euphorbia maculata*, *Lin.*; in the Mexican valley, also in the United States. The juice is used for removing spots from the cornea, and the decoction as a lotion for skin dis-

eases. The plant is sometimes erroneously substituted for *Chelidonium majus*, *Lin.*

Yerba del indio, *Aristolochia foetida*, *Kunth*.—See *AMER. JOUR. PHAR.* (1876), p. 49, and (1886), pp. 113 and 115.

Yerba mora; *Solanum nigrum*, *Lin.* Not used internally; the decoction in fomentation and vaginal injections.

Yerba de la mula, *Monnina Ocampi*, *Herrera, Mendoza et Villada*; *Polygalacæ*; in Huasteca, etc. The leaves are commonly regarded as tonic, and the fruit is used for dyeing linen violet-blue.

Yerba del negro, *Malva angustifolia*, *Cavanilles*. The plant is emollient.

Yerba del pastor, *Acalypha prunifolia*, *Kunth*; *Euphorbinacæ*; near Puebla, Mexico, etc. The decoction is vulnerary.

Yerba del pollo, *Commelyna tuberosa*, *Kunth*; *Commelynacæ*. The juice, leaves and stems are efficient hæmostatics. The extract is given in pills, or from 1 to 6 gm. dissolved in 180 gm. of water; for vaginal injections and topical application 4 to 8 gm. of the extract are used. *Tradescantia erecta*, *Cav.* *T. geniculata*, *Jacquin* and allied species have similar properties in a less degree.

Yerba del porrazo or del golpe, *Oenothera pumila*, *Fl. Mex. ined.* The decoction is used as a resolvent in contusions.

Yerba de la Puebla, *Senecio canicida*, *Fl. Mex. ined.*; *Compositæ*; in the State of Puebla. Roots yellowish white, branched; stem originating from a bulb, cylindric, shaggy, with linear, longitudinal violet spots; leaves alternate, deeply pinnatifid; inflorescence corymbose; heads heterogamous, yellow, radiate; akenes cylindric, not hairy. Rio de la Loxa found in the plant a poisonous organic acid, *senecic acid*. The plant has been recommended as antipsoric and sudorific; it has tetanic properties and has been used in epilepsy; in Puebla it is used for killing dogs.

Yerba de San Nicolás, *Ionidium angustifolium*, *Kunth*, *Violacæ*; in Tamaulipas. The root is tortuous, thin, whitish-gray or yellowish, slightly annulate, somewhat resembling white ipecac; medullium yellowish; inodorous; taste farinaceous, afterward acrid. It has, among the rural population, considerable reputation for the cure of dropsy.

Yerba de Santa María de México is feverfew, *Matricaria Parthenium*, *Lin.*

Yerba de Santa María de Tierradentro, *Tagetes lucida*, *Cavanilles*, is antiperiodic.

Yerba del sapo, *Eryngium amethystinum*, *Lin.*, *E. comosum*, *La-roche*, *E. Cervantesii*, *Lar.*, *E. subacaule*, *Cavanilles*, and other indige-nous species of *Eryngium*; *Umbelliferae*. The roots are considered to be diaphoretic and emmenagogue.

Yerba del tabardillo, *Piqueria trinervia*, *Cavanilles*; *Compositæ*; in the Mexican valley, Puebla, etc. The infusion of the plant is stimulant and febrifuge.

Yerba de la víbora, *Y. viperina*, *Myriadenus tetraphyllus*, *De Cand.*; *Leguminosæ*; in the State of Jalisco, in Jamaica, etc. The gum produced from this plant is antiperiodic.

Yerba del zopilote, *Acourtia moschata*, *De Cand.*; *Compositæ*; in Morelia. Used as a tonic and stomachic. *Perezia moschata*, *La Llave et Lejarza*, is known by the same common name.

Yerba del zorrillo, *Croton dioicum*, *Cavanilles*; *Euphorbiaceæ*; in the Mexican valley, Acatzingo, etc. The seeds resemble ricinus seeds, are flattened on one side, convex on the other, 3 or 4 Mm. long, smooth, glossy, black mottled with gray, carunculate, the episperm hard and brittle, the endopleura very thin, but distinct. Morales (Thesis, 1872) found in the seeds 29 per cent. of fixed oil, albumen, gum, resin, etc. The emulsion of the seeds is drastic, and, accord-ing to Dr. Mucio Maycote, the fixed oil may be advantageously used in place of croton oil. The root is likewise drastic in doses of 2 gm.

Yesgos del país, *Urtica mexicana*, *Fl. Mex. ined.*; in temperate districts. The root is used as a diaphoretic and as a substitute for *Sambucus Ebulus*, *Lin.*

Yolochiahitl, *Psoralea glandulosa*, *Lin.*; *Leguminosæ*; in hot and damp regions, in Chile, etc. The infusion of the leaves is vermifuge, and used externally as a vulnerary; the root is emetic.

Yoloxochitl or laurel tulipan, *Magnolia mexicana*, *Mociño et Sessé*; in Morelos and other states. The flowers which appear in March, contain, according to Mendoza and Herrera, volatile oil, resin, quer-citrin, tannin, etc. The infusion of the fresh flowers is antispasmodic, and the tincture of the fresh flowers is used as a tonic.

Yoyote or narciso amarillo, *Thevetia Iccotli*, *De Cand.*; *Apocy-naceæ*; in the hot and damp regions of the western slope. According to Herrera, the seeds contain non-drying oil, protein compounds, ex-tractive and the toxic principle tevetosin (see paper by Prof. Herrera in *Amer. Jour. Phar.* 1877, p. 145). The poisonous properties of yoyote are generally known, but the drug has not yet been employed

medicinally. The experiments of Dr. Hidalgo Carpio upon different animals have shown that tevetosin is a very active poison in doses of 0.05 gm., and that it acts as a violent emetic and paralyzes the respiratory and other related muscles. The seeds bruised and kneaded together with suet, are popularly employed for the cure of piles—a dangerous remedy.

Zábila, *Aloe variegata*, *Lin.*; Liliaceæ, in S. Angel, etc. The juice of the leaves is drastic and anthelmintic, and, according to Prof. F. Llamas, contains barbaloin, bitter resin, volatile oil, albumin, gum, etc.

Zacatlascal, *Cuscuta americana*, *Lin.*; Convolvulaceæ. Aperitive and laxative; also used for dyeing yellow.

Zanahoria, the cultivated root of *Daucus Carota*, *Lin.*; for emollient cataplasms.

Zapote blanco, *Casimiroa edulis*, *La Llave et Lejarza*; in Central Mexico. The fruit is anthelmintic and comestible.

Zapote borracho, *Lucuma salicifolia*, *Kunth*; Sapotaceæ; in Morelos. The fruit is comestible and is supposed to possess soporific properties; the seeds are used in pleurisy.

Zapote prieto, *Diospyros obtusifolia*, *Willdenow*; Ebenaceæ; in Cuernavaca and other hot districts. The leaves are astringent, the bark is antiperiodic and the fruit comestible.

Zapotillo, *Sapota Achras*, *Miller*; Sapotaceæ; in hot and moist localities. The bark is antiperiodic, the fruit alimentary, and the seeds are used as a diuretic and are believed to be poisonous. The plant yields a substance resembling gutta percha which is known as "chicle vírgen," and is used as a masticatory and for filling carious teeth.

Zaragatona, the seeds of *Plantago Psyllium* *Lin.*; mucilaginous.

Zarzamora, Blackberry. The leaves are astringent.

Zarzaparrilla. In the city of Mexico the roots of *Smilax medica*, *Schlechtendal*, are exclusively employed.

Zazale, *Mentzelia hispida*, *Willdenow*; Loasaceæ; in the Mexican valley, etc. The root is a pretty efficient drastic; the decoction is taken as an antiblennorrhagic. Jáuregui found in it a dark brown bitter resinous acid, fat, gum, sugar, starch, etc.

Zedoaria. Rarely used in medicine.

Zempoalxochitl, *Tagetes erecta* *Lin.*; Compositæ. The flowers are stomachic, febrifuge, anthelmintic and aperitive; the fruit is purgative and vermifuge. The plant contains volatile oil and probably the same principles which have been found by Latour in *Tagetes patula*,

*Lin.*; namely a coloring matter called *cuercetagenin*, red coloring matter, uncrystallizable sugar, pectin, wax, resin and salts.

*Zopatlé*, *Montagnæ tomentosa*, *De Cand.*, and *M. floribunda*, *La Llave et Lejarza*; *Compositæ*; in the Mexican valley, the second species also in Real del Monte and in Tlalpujahua. The first species has the stem cylindrical, striate and with gray and white spots underneath the tomentum; the leaves 13 Cm. long and 7 Cm. broad, triangular-oval, subcordate, triplinerved and toothed. The second species has a villous-pubescent stem and deltoid-oval and subdentate leaves. F. Altamirano found in the plant albumin, gum, fat, extractive, resins, a neutral brown-yellow bitter principle, and a peculiar acid, soluble in water and alcohol, and producing yellow precipitates with lead salts. The juice of the plant and the decoction are popularly used for producing contraction of the womb.

*Zumaque venenoso*, *Rhus Toxicodendron Lin.* The dose of the powdered leaves is given as being 0.20 to 0.60 gm. per day; but the dried leaves are stated to be unreliable, while the fresh ones are dangerous; the tincture prepared from the fresh leaves is to be preferred for medical use.

## THE PRESENCE OF POTASSIUM NITRITE IN THE POTASSIUM HYDRATE OF COMMERCE.<sup>1</sup>

BY PROFESSOR WYNDHAM DUNSTAN.

The object of this paper is to draw attention to a prevalent, though hitherto unnoticed, impurity in certain specimens of the potassium hydrate of commerce. In consequence of having observed unusual reactions with a solution of potash I was led to make a complete examination of the specimen from which it had been prepared. This had been obtained from a well-known wholesale house, and was cast in sticks having a light green tint. The aqueous solution after being acidulated with pure dilute sulphuric acid copiously liberated iodine from potassium iodide. This in itself is not of course sufficient evidence of the presence of a nitrite, but that the reaction was actually due to this impurity was proved by the effect on ferrous sulphate and by the evolution of ammonia when a strong aqueous solution was boiled with metallic zinc, as well as by other tests for nitrous acid. The quantity of potassium nitrite present was estimated by titrating

<sup>1</sup> Read at an Evening Meeting of the Pharmaceutical Society, Wednesday, March 10, 1886.

the acidified solution with potassium permanganate. In the specimen it was found to amount to 1 per cent. This quantity, although small, is of medical and pharmaceutical importance on account of the powerful therapeutic action of the alkaline nitrites. Other commercial specimens were then examined, and in all cases appreciable quantities of potassium nitrite were detected and estimated with the following result :

Specimen A contained 1.0 per cent. of $\text{KNO}_2$					
"	B	"	0.74	"	"
"	C	"	0.56	"	"
"	D	"	0.47	"	"
"	E	"	0.34	"	"

The specimens also contained nitrate, about 4.5 per cent. of chloride, silica and alumina ; they contained on an average 78-79 per cent. of total alkali.

Without knowledge of the previous history of these specimens, it is impossible to make any definite statement about the origin of the potassium nitrite. It might result from the deoxidation of the nitrate by heat, or possibly from the oxidizing action of fused potash on an organic compound containing nitrogen.

It is important that the potassium hydrate and the salts prepared therefrom for medicinal purposes should be free from nitrite, and I therefore mention that which I have found to be the most ready method of applying the potassium iodide reaction for its detection. Working on the usual lines, the solution and acidification of the substance cause the evolution of much heat, and unless special precautions are taken loss of nitrous acid occurs. The best method consists in adding a little solution of potassium iodide to about an ounce of diluted sulphuric acid, preferably contained in a flask. To this about half a stick (5 grams) of potash should be added, and the flask rapidly rotated, when iodine will be liberated, and color the liquid from a yellow to a reddish-brown, depending on the quantity of nitrite present. The estimation of the nitrite is most conveniently conducted with about the same quantity of potash dissolved in water and acidified without rise of temperature with pure diluted sulphuric acid. Further, it should be added that since potassium nitrite is insoluble in alcohol the potassium hydrate which is purified by solution in alcohol and known in commerce as "potash by alcohol" is free from this impurity.—*Phar. Jour. and Trans.*, March 13. 1886, p. 778.

BISMUTHI CITRAS, WITH AN IMPROVED FORMULA  
FOR THE PREPARATION OF LIQUOR BISMUTHI  
ET AMMONII CITRATIS.<sup>1</sup>

BY PETER MACEWAN,  
Pharmaceutical Chemist.

Whatever may be said against the new process for the preparation of liquor bismuthi, no one will deny that it is an honest attempt to get rid of the objectionable features of the old liquor, which was a very different thing from its prototype. Unless in strength, which is still very much over the mark, the formula given under *Liquor Bismuthi et Ammonii Citratis* is all right, provided we have a pure citrate to begin with. Therein lies the difficulty, for the official process for the citrate is almost unworkable, and, however modified, does not give a pure ammonia-soluble citrate.

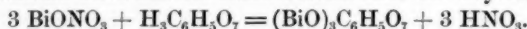
I have no personal experience of the commercial citrate, but since the publication of the new Pharmacopœia I have had numerous inquiries regarding it. The first inquirer had used a pint of ammonia solution for 800 grains of citrate, and yet did not obtain a perfect solution; it was milky and a portion of the citrate was untouched.

This complaint has been repeated by others, and some who have tested the citrate report the presence of nitrate in it, and so on. There have also been many complaints about the process, and it is these more particularly which have induced me to make this inquiry. No doubt manufacturers will see that they send out a pure article, and thus arrest further complaint; but there is a growing tendency amongst retail pharmacists to manufacture odd chemicals. Whether this is the outcome of better chemical knowledge or lack of business I am not prepared to say, though probably both have an influence. Be that as it may, the desire to manufacture on the small scale deserves encouragement, and surely the fountain-head of this encouragement ought to be our national Pharmacopœia. But in this case it is not so, the official process for the preparation of a few ounces of citrate of bismuth is the opposite of encouraging.

Already Mr. Stephenson has recorded his disappointment, and my results corroborate his to the full. If 11 ounces of nitric acid be used to dissolve the bismuth, water may be added to the solution *ad infinitum* without arriving at the critical point; with 6 ounces of acid

<sup>1</sup> Read at a meeting of the Edinburgh Chemists' Assistants and Apprentices' Association.

from 4 to 5 gallons of water are required, and with less acid the bismuth is apt to crystallize out before water can be added. Mr. Stephenson's objection is alone fatal to the process, but I believe the principle of it to be also bad. The official aim is to bring the bismuth as near as possible to the basic state before adding the alkaline solution. What could be more unreasonable? We require a normal citrate and try for an oxycitrate! I have obtained a citrate free from nitrate, yet not wholly ammonia-soluble, and this I take to be due to oxycitrate, the reaction between the basic nitrate and the oxycitrate being—



In this case this is a subordinate reaction, no doubt, but the nature of the process favors it.

We have the same error of principle in Rother's process, now in the U. S. Pharmacopœia. In this process bismuth subnitrate, citric acid and water are boiled together. Here, also, though the subnitrate undergoes complete decomposition, the product is not entirely ammonia-soluble. I have tried repeatedly, but cannot get the desired result by this process, and others in whom I have much confidence have had the same experience.

It was expected, owing to the introduction of oxide of bismuth into the 1874 Addenda, that Wood's process would have been adopted, and Mr. Umney even takes the new process as Wood's, but it is not so. In Wood's process bismuth oxide, preferably fresh, is dissolved in a mixture of solution of ammonia and ammonium citrate. This is a distinct advantage over the old process, but it has an objection, viz., an excess of ammonium citrate, which we know to be unnecessary.

In a paper by M. Méhu (see *AM. JOUR. PHAR.*, 1873, p. 541), we have a process which is all that can be desired. M. Méhu dissolves crystallized bismuth ternitrate in a strong solution of citric acid, saturates one-half of the mixture with ammonia, then adds the other half of the mixture, when normal bismuth citrate is precipitated. By this process, slightly modified, I have had admirable results. The citrate is precipitated in a bulky condition, and when dried on bibulous paper in a hot air oven, it is obtained in light and milk-white flakes, and forms with ammonia a bright, almost water-white solution, there not being a particle of insoluble residue. Méhu brings the process forward ostensibly for the direct preparation of the liquor, but as his paper does not contain other than approximate quantities, I give a formula for a pint of the liquor.

Take of—

Subnitrate of bismuth,	1 ounce and 180 grains.
Citric acid,	1 ounce and 60 grains.
Nitric acid,	1½ fluid ounces.
Solution of ammonia,	} of each a sufficiency.
Distilled water,	

Heat the subnitrate of bismuth with the nitric acid until the salt has dissolved and the solution has acquired the appearance of a syrup; with this mix the citric acid previously dissolved in an ounce of water by the aid of heat; divide the solution into two equal portions, and to one portion add solution of ammonia until the precipitate at first formed is redissolved; dilute with water to 1 pint, add the remaining portion of the bismuth solution with constant stirring, collect the precipitate on a calico filter, and wash with water until the washings are free from acid. Transfer the precipitate to a suitable vessel and add solution of ammonia gradually and with constant stirring until the precipitate is just dissolved. Dilute with water to 1 pint (imperial).

A competent practical pharmacist has at my request tried this formula, and he remarks, "It is an absolute contrast, in its simplicity, to the B. P. method;" but he fears that there is a great loss of bismuth in washing. This I had previously determined to be under 3 per cent., having obtained 97 per cent. of the theoretical yield of citrate. Hence, in the formula I give a slight excess of bismuth over what is required for 800 grains of citrate, and as the B. P. citrate may contain 2 per cent. of water, the loss in the washings is compensated by these provisions. Citric acid is also in excess. With the theoretical quantity the bismuth is apt to crystallize out before ammonia can be added. This is not by any means a fatal objection; therefore on the large scale it will be possible to modify the proportions which are given. Thus for citrate of bismuth the quantities might be—bismuth subnitrate, 13 parts; nitric acid, 14 fluid parts; citric acid, 10 parts.

It is obvious that the 1867 process may be modified according to the principle herein involved, and this may perhaps be the gentlest way for the Pharmacopœia authorities to recant.

*Note.*—Since the foregoing was written I have observed that Mr. Proctor, in his "Lectures on Pharmacy," recommends this process. I wonder why it has slipped recognition by the authorities?—*Phar. Jour. and Trans.*, Jan. 16, 1886, p. 602.

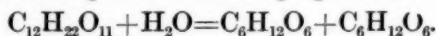
CHEMICAL AND MICROSCOPICAL STUDIES ON THE  
ACTION OF SALICYLIC ACID ON FERMENTS.<sup>1</sup>

BY DR. A. B. GRIFFITHS, F.R.S.E., F.C.S. (London and Paris).

(Lecturer on Chemistry, Technical School, Manchester; Examiner in Chemistry, Blairlodge  
School, Polmont, N. B., etc.)

My attention has been occupied with a chemical and microscopical study on the action of various compounds on the lower forms of plant life. I have already presented to the Chemical Society of London a paper on the action of a solution of ferrous sulphate on certain parasitic diseases which attack our crops. I wish here to detail some studies on the action of salicylic acid on certain ferments (organized and unorganized). A solution of salicylic acid was prepared containing 0.2 gm. of the acid in 1000 c.c. of water. A drop of yeast was placed on a slide under the microscope, and then a few drops of the above salicylic acid solution was run in between the slide and cover-slip, when I found it had no action on the true alcoholic ferment; for I was unable to stain the protoplasm of the cells with a dilute solution of eosin, showing that the protoplasm was not dead. But when I operated in a like manner on certain other organized ferments,—viz., on *Mycoderma aceti*, *Bacterium lactis*, and the *Butyric bacillus*—it was very different. On running in the same salicylic acid solution upon slides containing these various ferments they were quickly destroyed. What was observed under the highest powers of the microscope was that the salicylic acid acts chemically upon the cellulose or the *form* of cellulose making the external walls of these lowly organisms. It was evident that the acid dissolved the cellulose wall, and in some cases I could see that the cellulose wall had been perforated by the acid solution.

Beyond these facts, I have found that the above-named aqueous solution of salicylic acid also prevents the chemical action of hydration by means of the soluble zymases. If yeast is added to a solution of cane-sugar, and to this solution the salicylic acid solution is added, no decomposition, according to the following equation, takes place:



That is, the salicylic acid has acted upon the soluble zymase which is secreted by the *Torula cerevisiae*. Hence no fermentation takes place. I allowed the above to stand for two or three days at a temperature

<sup>1</sup> A Paper read before the Royal Society of Edinburgh, January 4, 1886.

most suitable to engender alcoholic fermentation (about 80° F.), and then tested for glucose sugars by means of Fehling's solution without any result. I also tried the action of the salicylic acid solution upon a solution of starch which had previously been "inoculated" with a small quantity of saliva. After standing several days I could not find the smallest trace of glucose sugar. From this, salicylic acid acts upon the soluble ferment (ptyalin) contained in saliva, preventing the hydrating action upon the amyloses.

Then, again, I have found that the above solution of salicylic acid acts chemically upon the cellulose walls of *dead* torulae, destroying them in a similar manner to the organized ferments already described at the commencement of this paper, but it (the acid) has *no* action on the *living* torula. This shows that a chemical change must have taken place in the molecular structure of the cellulose wall of the cell after death of the organism.

It is a well-known fact that in every brewery the yeast becomes deteriorated at certain times, and hence the beer brewed by such yeast is not so good as formerly. This is due to "disease ferments" in the yeast (the organisms I have alluded to in the early part of this paper). The common remedy is for the brewer to change his yeast. But I have found that this is not essential if the brewer waters the "diseased yeast" with the solution of salicylic acid; the "disease ferments" are all destroyed; the yeast is not acted upon by this solution. Yet at the same time the yeast so treated is not so active in its decomposition of a glucose solution into alcohol. This yeast can be revived by an aqueous solution containing 0.25 gm. of potassium nitrate and 0.2 gm. of sodium phosphate in 2000 c.c. of water. In fact, the torula appears to decompose a much larger quantity of sugar (in wort) into alcohol in a given time after the above salts have been added to 2 liters of wort than when the wort is not so treated. It appears that the torula lives its life-history to a certain extent by extracting the potash and phosphoric acid from these mineral substances, which come into the wort from the barley and hops. Mitscherlich long ago showed that the ash of yeast gave no less than 53 to 59 per cent. of phosphoric acid, and from 28 to 39 per cent. of potash. Hence it may be that a larger amount of alcohol would be produced in beers by the addition of small quantities of the above substances to the wort.

From the above investigation the following conclusions are to be drawn:

1. That a certain solution of salicylic acid has no action on the living torula, but dissolves it when dead, showing that some chemical change (post-mortem) has taken place in the cellulose of the cell-wall.

2. That the solution of salicylic acid destroys "disease ferments by acting upon the cell-wall, showing that their cellulose most probably differs from the cellulose of the *Torula cerevisiæ*.

3. That the solution of salicylic acid prevents the hydrating action of the various soluble zymases.

4. A solution of sodium phosphate and potassium nitrate revivifies exhausted yeast, and even increases the yield of alcohol in saccharine solutions.

5. Salicylic acid acts as an antiseptic agent of great value, because it acts directly on the disease ferments in beers, and not upon the true alcoholic ferment.

6. Salicylic acid is not a poison in quantities far exceeding the amount in the solution given in this paper. The acid is largely used in medicine in both France and Germany.

For those interested in the application of this acid in medicine I refer them to the following memoirs:

(a.) Wagner's, "Le traitement de la diphtérie, des maladies de l'estomac et des intestins."—*Moniteur Scientifique*, 1875, p. 355; also *Journal für Praktische Chemie*, xi, pp. 57 and 211.

(b.) Dr. Germain See's, "L'acide salicylique et les salicylates dans le traitement de la goutte et des rhumatismes."—*Rapport à l'Académie de Médecine de Paris*, June and July, 1877.

(c.) Fontheim's, "De l'action de l'acide salicylique employé comme médicament."—*Moniteur Scientifique*, 1875, p. 853.—*Chem. News*, January 15, 1886, p. 29.

### **Estimation of Quinine in Mixtures of Quinine-Alkaloids.**

—By Y. SHIMOYAMA (*Arch. Pharm.* [3], xxiii, 209-229).—The method described is founded on the relative solubilities of the oxalates of the quinine alkaloids:—Quinine oxalate dissolves in 1446 parts of water at 18°; cinchonidine oxalate in 228 parts at 15°; quinidine oxalate in 151 parts at 15°, and cinchonine oxalate in 104 parts at 10°. The precipitation is effected by adding sodium oxalate to a dilute neutral solution of the alkaloids, and correction must be made or the amount of quinine oxalate remaining in solution.—*Jour. Chem. Soc.*, 1885, p. 935.

# EUCALYPTUS PRODUCTS.

The introduction of the oil of eucalyptus into the new British Pharmacopœia will doubtless serve to direct attention to the products of this important genus of trees. The classical monograph of the genus by Sir F. von Mueller, of which ten decades are now before the public, contains a large amount of interesting and valuable information concerning both the oils of eucalyptus and the "kino" or inspissated juice yielded by many of the species. This information is, however, scattered throughout the body of the work, and the absence of a general index renders it by no means an easy task to piece it together. It may, therefore, save some time and trouble if a brief summary of the more interesting facts concerning these pharmaceutical products are presented in a connected form in these pages.

*Eucalyptus Oil.*—In a genus, of which the members so closely resemble one another that it is no easy matter to identify any given species, it might be imagined that the products would not vary to any great extent. This, however, is not the case, for not only do the volatile oils differ in specific gravity, but in flavor, and in the yield afforded by different species. The oil of *E. piperita* and *E. hæmastoma* have a peppermint odor, that of *E. citriodora* a citron odor, that of *E. Staigeriana* exactly resembles oil of verbena.

The percentage of oil in the different species will be readily seen from the following table, as given by Mr. Bosisto and Mr. Nitschke, as obtained from 1000 lbs. of about equal proportions of fresh leaves and twigs:

	Bosisto. Ounces.	Nitschke. Ounces.
<i>E. amygdalina</i> .....	500	
<i>E. oleosa</i> .....	200	62½
<i>E. leucosylon</i> .....	160	
<i>E. goniocalyx</i> .....	150	
<i>E. incrassata (dumosa)</i> .....		140
<i>E. globulus</i> .....	120	
<i>E. odorata</i> .....		112
<i>E. obliqua</i> .....	80	
<i>E. uncinata</i> .....		69
<i>E. gracilis</i> .....		54½
<i>E. rostrata</i> .....	15	
<i>E. melliodora</i> .....	7	
<i>E. viminalis</i> .....	7	

The difference in yield of *E. oleosa* obtained by Mr. Nitschke probably depends upon the fact that the quantity obtainable varies ac-

cording to the time of year at which the leaves are distilled. *E. oleosa* gives at one time only 2 pints, and at others as much as 1 gallon of volatile oil per ton of leaves. In summer, when the soil is hard and dry, it yields but little oil; but in winter, when the moistened earth permits of more vigorous vegetation and development, the percentage of oil is much larger. The contrary is the case with *E. amygdalina*, which grows in upland districts, and which consequently has its vegetation checked by the greater cold in winter, and therefore yields oil most abundantly in the summer. The eucalyptus oil of commerce, as pointed out by Mr. MacEwan and others, has hitherto consisted chiefly of the oils of *E. amygdalina* and *E. dumosa*. The former lends itself well to the dilution of the more valuable essential oils, such as neroli, rose, etc., for use in perfuming soaps, etc. The latter finds its principal use in the manufacture of varnishes, a comparatively small proportion being used in medicine. This will be readily understood from the fact that in Mr. Bosisto's manufactory alone at least six tons of leaves are operated on daily, and the annual production is not less than 12,000 lbs. of the oil.

The solvent powers of eucalyptus oil on resins, etc., have been given in the following order: mastic, sandarac, elemi, xanthorrhæa, resin, benzoin, copal, amber, anime, shellac, caoutchouc, and guttapercha:

The oil added to methylated spirit, in the proportion 10 ounces of the former to 1 gallon of the latter, is used to dissolve kauri resin, which will dissolve in this mixture without the aid of heat, to the extent of 2 lbs. out of every 2½ lbs. used: the addition of a little colophony or Venice turpentine rendering the kauri resin completely soluble. It is also used to dissolve asphaltum for photograph varnish. In veterinary practice it is used in Australia as an embrocation for swellings, bruises or stiff joints. In domestic practice it is employed for rheumatism, etc.

The necessity for manufacturing the oil cheaply as a commercial product has naturally led to the choice of the two species mentioned, which as will be seen from the above table, yield a much larger quantity than *E. globulus*. The two other species which yield more oil than the latter, viz.: *E. leucoxylon* and *E. goniocalyx*, being probably more scattered in mode of growth, would be less easily procurable.

The oil which passes in commerce under the name of oil of *E. dumosa*<sup>1</sup> is likely to vary considerably in specific gravity and in charac-

<sup>1</sup> *E. dumosa* is considered to be a small form of *E. incrassata*.

ter since it is obtained from the mallee scrub, a dense shrubby growth covering desert land and consisting of a mixture of *E. oleosa*, *E. in-erassata*, *E. gracilis* and *E. uncinata* in different proportions. Mr. Bosisto calculates that in Victoria alone the mallee scrub is capable of furnishing 4,843,872 gallons of oil, and the *E. amygdalina* 280,861,000 gallons.

Other species yielding abundance of oil, such as the *E. salubris* of W. Australia, will probably furnish volatile oil to commerce, when manufactories are established in the districts where they are abundant. The trees mentioned by Sir F. von Mueller as oil-yielding species are *E. salmonophloia* and *E. Raveretiana*, W. Australia; *E. acmenoides*, *E. microcorys* and *S. eugenioides* in the Southern provinces. The volatile oil of *E. citriodora* will probably become an article of export as soon as it can be manufactured on a commercial scale, so as to compete in perfumery with oils of similar odor. This tree is regarded as a variety of *E. maculata*, bearing the same relation to it that *Thymus citriodora* does to *Thymus serpyllum*. The remark is made concerning it, in 'Eucalyptographia,' that the perfume seems only developed within the subtropical regions of the range of this species, but that it is nevertheless hereditary, *i.e.*, when cultivated outside those regions.

Under the head of *E. crebra*, another species of eucalyptus, discovered by Mr. Sellheim, is alluded to as having lemon-scented foliage. This has since been described by Mr. T. M. Bailey, in the excellent synopsis of the 'Queensland Flora,' as a new species, under the name of "*E. Staigeriana*, F. von Mueller, ined." This plant, according to Mr. Staiger, yields a large quantity of volatile oil,  $2\frac{3}{4}$  per cent., which so exactly resembles oil of verbena in odor, that it might easily pass for it. Its specific gravity is 0.901. The odor of the oils of *E. piperita* and *E. haemastoma* bears some resemblance to peppermint.—*Phar. Jour. and Trans.*, January 9th, 1886, p. 581. (See also AM. JOUR. PHARM., 1876, pp. 371-375.)

**Menthol in Urticaria and Pruritus.**—Among the myriad of remedies for these troublesome affections we have no other which affords such complete and instantaneous relief as a solution of menthol. We have used this remedy for urticaria in three cases. Not only is the itching relieved for the time, but a cure seems to be effected. In pruritus ani, and in eczema, moistening the parts with menthol solution causes an immediate cessation of the pain. The solution should contain from 2 to 10 grains of menthol to the ounce of water.—*Buffalo Med. and Surg. Jour.*, March, 1886, p. 382.

## COLORED REACTIONS OF PHENOLS WITH CARBOHYDRATES.

BY ANTON IHL.

These reactions are produced by adding the pulverized carbohydrates to an alcoholic solution of the phenol.

*a*-Naphthol gives with cane-sugar at a gentle heat a splendid reddish violet color, which disappears on the addition of water; with milk-sugar a fine violet and with starch a dark red violet.

$\beta$ -Naphthol gives with cane-sugar a yellow, which on prolonged boiling turns a dark greenish yellow with a greenish fluorescence; with milk-sugar, a pure yellow without fluorescence; with glucose, a yellowish green color with a strong green fluorescence; with dextrin, a yellowish; with arabin, a light yellow; and with starch, a faint yellow.

Resorcin gives with cane-sugar an intense fiery red, which retains its color on dilution with water; with milk-sugar, glucose, dextrin, arabin, and starch, yellowish red.

Pyrogallie acid gives reactions very similar to those of resorcin.

Phloroglucin gives with cane-sugar, on gentle heating, an intense yellowish red color, which became a fine light yellow on dilution with water; with milk-sugar a reddish brown; with glucose, a yellowish red; with dextrin, a slight dirty yellow; with arabin, on prolonged heating, an intense cochineal-red pigment, which is permanent on the addition of water.

The phenols are also well adapted for the detection of woody matters. They are used in an alcoholic solution, mixed with hydrochloric or sulphuric acid, and applied either cold or hot to the paper or wood in question.

Solution of orcin mixed with hydrochloric acid gives a splendid dark-red on wood; upon paper containing wood-stuff it gives a dark red-violet spot. Pure cellulose-paper undergoes no change.

Resorcin with alcohol and hydrochloric acid colors wood-stuff paper a violet-blue in a short time. Pure cellulose-paper remains unaffected. Resorcin with alcohol and sulphuric acid (one vol. alcohol, one-third vol. sulphuric acid), when warm, colors wood-paper or wood a dark violet-blue. Pure cellulose-paper is colored an onion-red.

*a*-Naphthol in alcohol and hydrochloric acid colors wood-stuff paper and wood greenish.

*a*-Naphthol, in equal volumes of alcohol and sulphuric acid, colors wood-stuff paper a dark green, whilst pure cellulose-paper takes a red-violet.

Pyrogallic acid in alcohol and hydrochloric acid colors wood-stuff paper and wood a bluish green.

Carbolic acid in alcohol and muriatic acid colors wood and paper containing wood a yellowish green.—*Chem. News*, 1886, p. 16; *Zeit. f. Anal. Chemie*; *Chemiker Zeitung*.

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## ACETOPHENONE, OR HYPNONE, A NEW HYPNOTIC AGENT.

By S. LIMOUSIN.

(Paper read before the Paris Société de Pharmacie. From the *Archives de Pharmacie*, vol. i., p. 1.)

Dr. Dujardin-Beaumetz has recently submitted to the Académie de Médecine and the Société de Thérapeutique the results of his clinical experiments upon the hypnotic properties that he has discovered in acetophenone, methylphenylacetone, or methylbenzoyl. He proposes to confer on this new remedy the name "hypnone," as being more easily remembered, and at the same time recalling its hypnotic properties.

The compound belongs to the aromatic series, and has for its formula  $C_6H_5.CO.CH_3$ . It has been obtained by Friedel by causing chloride of benzoyl to react upon zinc methyl, or by distilling a mixture of benzoate and acetate of calcium.

Acetophenone is a colorless, mobile, very refrangent liquid, boiling at  $198^\circ C$ . It is volatile, and its odor is tenacious and very persistent, recalling at the same time oil of bitter almonds and cherry laurel water. It is not inflammable, but it intensifies the combustion of substances impregnated with it. About  $4^\circ$  or  $5^\circ C$ . it becomes solid and forms a mass of large interlacing crystals. Its density is nearly that of water, but slightly superior, a cubic centimeter weighing 1.6 gm. It is not soluble in water or in glycerin.<sup>1</sup> The difference between the

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<sup>1</sup> According to M. Vigier, hypnone is soluble in glycerin in the proportion of 1 part in 60 parts by weight.—*Ed. Archives*.

density of acetophenone and that of water is so slight that it remains in suspension in that liquid in the form of globules for some time before reaching the bottom of the vessel. It is neutral in reaction to litmus paper.

Acetophenone is very soluble in alcohol, ether, chloroform and benzine. I have ascertained also its great solubility in oils and particularly in oil of sweet almonds, which has suggested to me the idea of enclosing it in capsules after dissolving it in that menstruum.

With a compte-gouttes titrated according to the indications of Lebaigue acetophenone gives thirty-nine or forty drops to the cubic centimeter, which is nearly double the number of drops obtained with a cubic centimeter of water; each drop therefore weighs about  $2\frac{1}{2}$  centigrams.

The liquid produces upon paper a rather persistent oily spot. Brought into contact in the cold with sulphuric acid, hydrochloric acid or perchloride of iron, it gives rise to no reaction or characteristic coloration. With nitric acid there is a production of a yellowish color. It dissolves bromine and iodine in large proportions with considerable development of heat, especially in the case of bromine.

Dr. Dujardin-Beaumetz was the first to demonstrate the hypnotic properties of acetophenone, which had escaped the observation of Popoff, who after Friedel was occupied with the study of this compound. The dose in which he has administered it to his patients has varied from 1 to 16 drops, and this dose always induces, according to him, four to six hours of refreshing sleep.<sup>2</sup> The quantity should be administered in a single dose to obtain a well-marked hypnotic effect, and it should be proportioned to the age and temperament of the patient. When injected subcutaneously, in the pure state, into guinea-pigs, in a dose of 50 centigrams to 1 gram, it brought on a kind of comatose somnolence, followed by the death of the animal five to six hours after injection.

Dr. Constantin Paul and Dr. Huchard have also experimented with this medicament in their hospital practice, and they have arrived at conclusions very similar to those of Dr. Dujardin-Beaumetz.

In the first experiment Dr. Dujardin-Beaumetz administered the acetophenone diluted with alcohol, ether, or glycerin, and enclosed in capsules.

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<sup>2</sup> It may be well to remark here that hypnone does not act when there is pain; it only procures sleep for persons free from suffering.—*Ed. Archives.*

M. Vigier has proposed to administer acetophenone under the form of a syrup, prepared according to the following formula:

Hypnone.....	1 drop.
Alcohol (60°).....	1 gram.
Syrup of orange flowers.....	6 grams.

A tea-spoonful would correspond to one drop.

M. Vigier has also suggested the form of an elixir:

Hypnone.....	1 drop.
Alcohol (90°).....	3 grams.
Syrup of peppermint.....	3 grams.

M. Petit has also proposed certain analogous formulæ, into which he introduces glycerin, but this, in my opinion, is useless, since acetophenone is as insoluble in glycerin as in pure water.

Lastly, Dr. Constantine Paul administered it in a mixture as follows:

Hypnone.....	4 drops.
Glycerin.....	2 grams.
Looch blanc (Codex)*.....	50 grams.

In this preparation the acetophenone remains mixed with the looch; this is probably due to the oil contained in the almonds, and not to the glycerin, which would with advantage be replaced by 2 gms. of oil of sweet almonds.

Considering the small doses in which this medicine should be administered, and the precision necessary in its measurement, I consider it preferable to employ gelatinous capsules, each containing two drops of hypnone and a few drops of oil of sweet almonds. In this way the ingestion is avoided of a certain quantity of strong alcohol or ether, which is relatively large considering that the dose of hypnone is only a few drops.

Whatever may be the future reserved for this medicament,<sup>4</sup> the experiments by Dr. Dujardin-Beaumetz will remain none the less interesting as showing the multiple resources presented to therapeutics in the new compounds created every day by modern organic chemistry. *Phar. Jour. and Trans.*, Jan. 9, 1886, p. 582.

\* A preparation resembling *mistura amygdalæ*, but more concentrated, and containing bitter almonds and orange-flower water.

<sup>4</sup> One of the inconveniences of hypnone is that it communicates to the breath a disagreeable odor, due to its elimination by the respiratory organs.—*Ed. Archives.*

## THE CULTIVATION OF COCA.

BY HENRY H. RUSBY, M. D.

For more than two months the writer has been continuously engaged in the study of the coca-plant and its products in the districts of Bolivia which produce the best quality of leaves. The results, which are likely to greatly increase the recently-created interest in the plant, will be published shortly, when his studies shall have been concluded. At the present time I will only discuss a question concerning which speculation is rife, namely, the adaptability of the plant to culture in countries where it is now unknown.

For the details concerning cultivation here presented I am chiefly indebted to Mr. Oscar Lohse, one of the most intelligent cultivators in this country, and proprietor of the Finca of San Antonio, two leagues from the town of Caroca, Yungas.

The district of Caroca may be considered as fitly representing the remainder of Yungas, and Yungas as representing the principal coca districts of this republic. The conditions of soil and climate may be briefly stated. Proceeding eastward from La Paz, itself somewhat more than 10,000 feet<sup>1</sup> above the sea, for a distance of four or five leagues, we reach the summit of the pass over the easternmost cordillera of the Andes, this cordillera having an average elevation in this immediate district of perhaps 16,000 feet. This ridge, always more or less snow-covered, cuts off a large portion of the westward-bound clouds, which are thus either precipitated in the form of rain before reaching the summit, or, arriving there, are deposited in the form of snow, and then returned by means of rivulets to the valleys, chiefly of the eastern slope. It should be noted that in Northern Peru and Ecuador this cordillera is higher than here, so that the eastern slope in those regions is more profusely and regularly watered than here. From this pass, had we a direct road, we could travel in half a day, so steep is the descent, to the banks of the Caroca River, having an altitude of only 2,400 feet. When we have descended to 6,400 feet we should meet with our first coca plantations, and after passing the 2,000-foot level we should have left them principally or entirely behind. Within this 4,000 or 5,000 feet, then, lie the cocales of Bolivia. No description can convey a perfect idea of the steepness of this luxuriant slope. Travel, entirely by riding-animals, is extremely

<sup>1</sup> I have given altitudes and measurements approximately in English feet. By the Spanish measurements the altitudes are much greater.

difficult. There are only occasional places where we can readily leave the road, and here plantations are established. The hedge of coffee-plants at the roadside proves on examination to be the uppermost row of a plantation; and as we peer down among the shrubs we marvel that any one can preserve his footing while cultivating or collecting the coffee. The scenery is of course magnificent, and of a different type, I should think, from that of any other part of the world. The mountains are too young to have lost, to a great extent, their ragged outline, yet softness is imparted by the richness of the vegetation. We stand among the coca-plants and distinctly see another cocal nearly 4,000 feet below us.

As there is no better guide to the agricultural capacities of a country than its native plants, I will mention the characteristic classes. At the pass, with an altitude of about 13,000 feet, we have but little vegetation,—this low and mat-like, to escape the cold and the winds. Crossing, soon after, a spur having an elevation of 1,000 or 2,000 feet less, we meet with several Gentianaceæ, notably a *Halenia*, believed to be *H. Rothrockii*, Gray, of New Mexico. Here, also, are some shrubs in Acanthaceæ and Bignoniaceæ. At 9,000 feet we begin to find Orchids and Calceolarias, with some small trees in Melastomaceæ. At 8,000 feet we meet with our first tree-ferns; the timber-trees become quite large, and Begonias begin to make their appearance. From this point the vegetation begins to assume a really tropical aspect. We find many species of Calceolaria, Fuchsia, and Amaryllidaceæ, while the variety of orchids and ferns is quite bewildering. At 6,500 feet we see the first palms, and the forest-trees become buttressed giants, staggering under their loads of vines and climbing aroids and ferns, and their branches covered with Bromeliaceæ, orchids, and other parasites. Seventy parasites have been counted upon a single fallen tree.

The cultivated plants of the coca district are coffee, rice, cacao, sugarcane, tobacco, maize, cotton (the arborescent species), sweet potatoes, yuccas, and the ordinary garden vegetables. The principal fruits are oranges, bananas, cocoanuts, lemons (sweet and sour), citrons, grapes, chirimoyas, alligator-pears, tumbas, pomegranates, grenadillas, figs, papayas, lukmas, melons, and pineapples, the last just introduced.

The soil in such a broken country is of course very diversified, ranging from a very light decomposed shale or sandstone to a heavy blue or chiefly yellow clay.

The rainy season begins in October, and continues until May or June. During this time the rains are copious and almost constant. During the succeeding two months there is scarcely a drop of rain, and during the next two there are only occasional showers.

Such are the conditions under which the coca grows in this section.

When we come now to consider the methods of cultivation here adopted, we must be cautious about accepting them as the best, merely because they are generally followed here. It is to be remembered that the Bolivian system of agriculture has not received the attention that it should have had, and that it is very probable that reforms might be introduced in present methods.

Nor is it proper to proceed concerning coca-culture without a few words concerning what is meant by the "best quality" of coca-leaves. To a manufacturing chemist the best quality would mean the quality that would yield the largest percentage of crystallizable cocaine, obtainable in the easiest manner, while the same coca might be considered for domestic consumption as representing one of the lower grades. It is highly probable that the amount of cocaine forms no element in the Indian's estimate of the quality of coca, no more than the percentage of nicotine establishes the quality of a particular grade of tobacco. Coca-leaves are classed in general by the Indians as "*hajas dulces*" (sweet leaves) and "*hajas amargas*" (bitter leaves). The former are made sweet by the abundance of alkaloids other than cocaine. While it is true that a greater abundance of those alkaloids is usually accompanied by a larger percentage of cocaine also, yet the variation in the amount of the latter is not so great as in the former; so that while in the sweet leaves the bitter taste of the cocaine is masked by the presence of the other alkaloids, in the bitter leaves its flavor is the predominant one. The presence, then, of these *sweet alkaloids*, as we may call them, translating the simple and expressive term of the Indians, determines the domestic value of the coca, and all that is known of the best methods of cultivation is based on the production of the highest percentage of these alkaloids. Experience may determine that for manufacturing purposes a very different line of principles of culture should be followed.

I have made a large number of assays tending towards elevations, soils, exposures, seasons, ages of plants, and of leaves, different varieties, wild and domestic, different parts of the plant, and various modes of drying and packing. The results will be embodied in a future mono-

graph, mere passing references being made to them for the present. I have about concluded that the percentage of the sweet alkaloids varies inversely as the amount and continuousness of moisture that the plant receives. Thus, the Peruvian, Ecuadorian, and Brazilian coca, which, as I have stated, is much more copiously and regularly watered than the Bolivian, is markedly inferior, so that Bolivia regularly exports about one-eighth of her crop to those countries. I am inclined to think that the greater breadth and thinness of the northern leaf may be partly due to the greater water-supply and the consequent greater degree of evaporation. Again, the Indian always seeks the coca grown at the higher elevations, where the humidity is much less and more irregular than in the districts along the rivers. We are thus obliged, for reasons to be elaborated in the future, to regard these alkaloids as preserving a sort of a balance of moisture, by which the plant stores up during the wet weather a concentrated supply of water, which may be very slowly yielded up during a time of need.

Having thus chosen a high altitude, the next thing is to select a soil. A rivalry exists between a yellow clay and a hill-side soil rich in vegetable matter. My assays have yielded the best results (as to total alkaloids) from soils of the latter class, and I am inclined to think that those who prefer the former soil do so because it yields a somewhat larger crop.

The ground for the nursery-bed is prepared during the latter part of the dry season by breaking it up very thoroughly to a depth of a foot or more. The fruits mature during the early part of the rainy season, December and January. They are red, and consist of a fleshy outer portion and a shell-like inner portion, which encloses the single seed. These people suppose that the germ cannot escape from the shell if planted in its natural condition, and they have continued for hundreds of years to deposit the seeds as soon as gathered in a shaded place, in layers an inch or more deep and covered with a thin layer of decaying leaves or similar substance. The heat generated by the decomposition of the fleshy pericarp serves to induce germination, and the embryo bursts from its bony covering. This growth unites them, in from eight to fourteen days, into a solid mass, which is broken up into small pieces and planted in furrows in the nursery. In this process very many of the sprouts are broken off and the plants destroyed. Mr. Lohse has adopted the plan of sowing the seeds broadcast as soon as gathered, and covering with a little earth, or, better, a

layer of banana-leaves or other decaying vegetable matter. Germination requires from eight to twelve days longer, but all the plants are saved. In either case a covering of brush or straw must be placed over the nursery, at first only three or four inches above the surface, and elevated to six or seven inches as the plants grow. Usually this elevation is repeated once more.

All this taking place during the rainy season, the plants have reached a good size before the advent of the dry weather, and so do not call for any artificial water-supply. Advantage is taken of the ensuing dry season to clear the land and prepare the ground for the new cocal. On the manner in which this is done depends much of the future well-being of the plants. The ground should be thoroughly powdered to the depth of two, and, if possible, three feet, all roots and large stones being removed. On these steep slopes it is necessary to terrace, the terraces being supported by stone walls, the stones laid dry. The width of the terraces, according to the slope, varies from several feet, with a number of rows of plants, to much less than the height of the wall, only a single row of plants being admissible. It is here generally believed that shade tends to the production of the best quality of leaves; so the cocal are planted thickly with a small broad-topped leguminous tree related to the St. John's bread, but whose name I cannot at this moment recall. There is no doubt that this is a mistake. I have made repeated comparative assays of shade-grown and sun-grown leaves from adjoining plants, and invariably found the latter much richer in total alkaloids. I judge the custom to have arisen from two considerations. There is, as I have stated, a period of two or three months when the plants receive no rain, and then these trees afford a protection from the fierce heat. Secondly, shade conduces to the production of a large, smooth, beautiful leaf, of elegant color, and thus adds to the *appearance* of the product. The terraces being thus prepared, on the advent of the permanent rainy season the plants, now from eight to twelve inches high, are transplanted, being set from one-half to six inches apart, according to the ideas of the hacendero. From this time until the first leaves are picked the greatest care must be taken to keep the soil thoroughly stirred and free from weeds. The plants having been transferred in October or November of one year, the first picking is made in March or April of the second following year, one year and a half from the time of transplanting, or two and one-half from the seeds. In case

an insufficient space has been prepared, the remaining plants are often left until the following year, and then transplanted, the operation being much more dangerous to the life of the plants.

The chief danger of picking the leaves earlier than the period indicated above is not the strain upon the vitality of the young plant, as many of the leaves drop of themselves, but because it is almost impossible to avoid breaking off the very tender tips of the twigs, the result being fatal to many plants. Immediately after this first picking, fresh leaves develop with great rapidity, and in July or August of the same year the plant flowers for the first time. The lovely white flowers, if undisturbed, remain for from three to six days; but from the very first they are dislodged by the slightest jar, the corolla falling entire, although it is morphologically polypetalous. The fruit ripens in December and January.

During the first few years the percentage of alkaloid increases rapidly, reaching its maximum at or before the age of ten years. At the age of twenty it begins to diminish, but with extreme slowness, so that the plants are practically in their prime up to the age of thirty-five or forty. It is probable that the decline is then due rather to the exhaustion of the soil than of the vitality of the plant. Fertilization of the soil has never been resorted to. It is probable, as suggested by Mr. Lohse, that as much can be done for the coca in this way as has been done for other plants.

A coca harvest is called a *mita*, an Indian word meaning a division or drawing of lots, and there are from three to five in a year, according to the season. The time of picking is determined solely by the condition of the leaves. When they have become mature they turn yellow, if in the dry season, and brown, if in the rainy, and within eight days at the outside will fall to the ground and be lost. As soon as the *mita* is over, the ground is cleared from weeds, and, under an ignorant notion that further cleaning is injurious, is left undisturbed until after the next *mita*. But Mr. Lohse has tried the plan of keeping the ground clean, with the result, thus far, of receiving the next crop in little more than one-half the time required by his neighbors. No irrigation is resorted to during the dry season. Although it is possible that good might result, at least to the welfare of the plant and the size of the crop, I suspect that after a long time an abundant and steady supply of water would result in a decrease in the amount of alkaloids. Mr. Lohse has tried the experiment of

mulching at the end of the wet season with a few inches of banana-leaves or other refuse, with excellent effect upon the plants during the succeeding dry season.

This plant is subject to only two diseases of any importance. The first is *taja*, which I suppose to be the result of a fungus which attacks the undeveloped leaves and tender twigs. It is said by some to be caused by careless picking, in which the twigs are broken. By others it is said to result from the planting of seeds taken from young plants. The only remedy is to remove and burn the diseased portions. The second disease, if such it can be called, is the ravages of a caterpillar called "*ulo*," which makes its appearance in December, and destroys the crop so quickly that it admits of no remedy.

The method of picking and drying the coca has been so often and so well described of late that it is not necessary to dwell upon it. Coca-picking is a profession to which the children are trained from a tender age. The leaves are picked singly, both hands being employed with a rapid alternating motion, which strips a twig in an instant. Great care is taken to avoid breaking the twigs, and the young leaves are not picked. Little sacks are tied about the waist, or the women's aprons are pinned or sewn into the required form. They are then transferred to larger sacks, which must be filled and emptied with great promptness, or the leaves will become heated and turn black.

The price here paid for picking is a Bolivian dollar, equal to about seventy-one cents United States currency, for each thirty pounds, which, when dry, will weigh about twelve pounds.

The leaves are exposed to a hot sun upon a pavement of nicely-fitted flat stones, and stirred occasionally until dry. Under the most favorable conditions the drying is accomplished in about three hours. About the coca place are built the storage and packing-sheds. These are furnished with very broad doors, and men are in constant attendance to sweep the coca with brush-brooms through these broad portals at the slightest indication of rain. A very few drops of rain are sufficient to decolorize and ruin the sale of the coca, though it is my impression that such decolorization, if produced by but little rain, is no indication of loss of cocaine. During the first few days that the dry coca lies within the storage-sheds it undergoes a slight sweating process.

When I come now to speak of the best methods of packing the

coca for export, it is fair to say that nothing definite is known. Such coca as has reached Europe or the United States in good condition has done so purely by accident; for perhaps the very next lot, dried, packed and shipped as nearly as possible in the same manner, has arrived entirely ruined. I have tried many methods, and as often as I had thought that the secret was discovered, my hopes have resulted in disappointment.

As regards the exportation of the culture of coca, the experiment has been tried, I believe, but once. Several years since, Mr. F. L. Steinart, of La Paz, shipped a small quantity of seeds *via* London to Ceylon, and during the past season the first products were shipped to London and sold at a high price. Seeds for export should be exposed for several days to a hot sun, so as to rapidly dry the fleshy exterior, which thus forms a protection to the germ within.

It is my opinion that the coca-plant is adapted for culture in many countries where it is now unknown. Among the countries where it would be well to experiment with it are Guatemala, Mexico, the East and West Indies, India, Southern China, portions of Africa, and possibly of Italy. It is doubtful if it would grow in any portion of the United States. Requiring an average temperature of at least 70°, the only districts at all suited would be Florida and Southern Texas; and it is highly probable that proximity to the sea-coast at so low an altitude would prove fatal. Nor would irrigation prove adequate in those countries possessing a long dry season. The plants must not only have an abundant supply of water at the roots; they must be bathed in a humid atmosphere for the greater portion of the year. But from what I have read of some of the countries above named, I am confident that the plant would there find a congenial home. Jamaica offers especially hopeful conditions.—*Therapeutic Gazette*, 1886, pp. 14-18.

**Amyl Nitrite as a Physiological Antidote in Cocaine Poisoning.**—Schilling records a case of severe cocaine poisoning, in which, after the intragingival injection of two drops of a twenty per cent. solution of this drug, motion and sensation entirely disappeared. Complete amaurosis and deafness were present. The patient could swallow well, and called to her husband, who was absent, complaining of cold and darkness. Schilling, recognizing the condition as one due to contraction of the cerebral vessels, exhibited nitrite of amyl. The face of the patient immediately became suffused, and she cried, "Now it is light again." After three inhalations she was in condition to reply correctly to all questions, and soon after returned to her home.—*Med. News*, March 6, 1886.

## THE INFLUENCE OF KAIRINE, THALLINE, HYDROCHINONE, RESORCIN, AND ANTIPYRINE ON THE HEART AND BLOODVESSELS.

BY DR. H. G. BEYER.

Chemists, for a number of years, have been industriously experimenting, hoping to find a way to produce quinine artificially. The result has been the discovery of a number of substances, some of them belonging to the phenol series of organic compounds, and possessing to an eminent degree the power of reducing hyperpyrexial temperatures. Of these, kairine, thalline, hydrochinone, resorcin, and antipyrine, have all been found to reduce abnormal temperatures to a greater or less degree, in almost all febrile disorders promptly, though perhaps not permanently. An experimental inquiry into the probable relations of these new antipyretics to the circulatory apparatus has been made by Dr. Beyer, and the results, which he gives in an elaborate article on the subject, justify the attempt to solve the problem.

The experiments have been arranged into two groups: I. Experiments on the work done by the heart when isolated from the central nervous system. II. Experiments on the bloodvessels: on the flow through the vessels of animals the brains and spinal cords of which had been destroyed; on the lingual vessels of curarized frogs. In addition to this, a short account of the influence of these drugs upon the corpuscular elements of the blood and the coagulation of blood is given.

Dr. Beyer's experiments show that kairine reduces temperature, both by diminishing heat production and by increasing heat radiation. The distinctive influence it exerts on the red blood-corpuscles, however, and the weakening effect upon the heart, render its employment objectionable and dangerous.

Thalline, like kairine, reduces temperature by diminishing heat production, and by increasing heat radiation; as an antipyretic it is less dangerous, but no less objectionable, than kairine, for while its effect upon the ventricle of the heart is less depressing than that of kairine, its influence upon the blood-corpuscles is sufficient to condemn it.

The action of hydrochinone is similar to that of kairine and thalline. Resorcin reduces the temperature by increasing heat radiation by the dilatation it produces in the capillaries and veins, especially the latter.

Antipyrine reduces temperature purely by increasing heat radiation, owing to its extensively dilating the veins and capillaries; but what stamps it as an excellent antipyretic is that, besides dilating the

veins, it also has a tonic influence on the heart and slightly increases arterial pressure, or, at any rate, does not cause a diminution of the same. It has, moreover, no injurious influence on the blood or the muscular tissues, and strengthens the auricles.

The objection to the employment of kairine and thalline as antipyretics arises from the fact that they cause heart paralysis, especially affecting the auricles, in doses only slightly larger than are sufficient to produce a lowering of the temperature. But this objection becomes an absolute danger when we take into account the destructive influence upon the blood-corpuscles and tissues generally.

Hydrochinone and resorcin, although not exerting the same weakening and directly paralyzing influence upon the ventricle of the heart which is peculiar to kairine and thalline, both paralyze the venous side of the heart, viz., the auricles, and greatly lower the tone of the walls of the veins. The extra amount of blood, therefore, which is driven into the veins through the increased action of the ventricle, is only with great difficulty returned to the ventricle, and here the danger is not so much from failure in the power of the ventricle as in the case of kairine and thalline, as from the danger of *bleeding the animal to death into its own veins*. The intense visceral and especially pulmonary congestion found post-mortem, by Dujardin-Beaumetz, and others, in animals killed by resorcin, seems to confirm this view of the matter.

Antipyrine, though largely dilating the veins, increases the power of contraction of both auricles and ventricle, and has no injurious influence upon the blood nor the muscular tissues, and therefore possesses, indeed, all the good qualities of a perfect antipyretic.—*Am. Jour. Med. Sciences*, April, 1886, p. 369-402.

**Cocaine. Correction.**—Dr. A. B. Lyons desires to correct a statement made in his paper on cocaine, with regard to the value of the equivalent of Mayer's reagent in estimating the alkaloid by titration. The figures given (*Amer. Jour. Phar.*, Oct., 1885, p. 473) are only one half the true values. Thus in a solution containing one part of alkaloid in 500, one c. c. of Mayer's reagent precipitates twenty milligrams instead of ten of the alkaloid. The error arose from the use of a solution—as recommended by Dragendorff—of just one half the strength of the ordinary Mayer's reagent. Any attempt, however, to employ this reagent in the practical evaluation of galenical preparations of coca is likely to lead only to confusion and disappointment.

## THE REACTION OF ATROPINE WITH MERCUROUS SALTS.

BY ALFRED W. GERRARD, F.C.S.

The *Pharmaceutical Journal* of January 16 (see *AMER. JOUR. PHARM.*, 1886, p. 129), contains a communication by Professor Flückiger which confirms a previous observation of mine that atropine and other mydriatic alkaloids throw out mercuric oxide from mercuric chloride. In the same communication Professor Flückiger also states "mercurous chloride, however, is not blackened by atropine;" this being contrary to fact I have placed on record the experiments on which my assertion is based.

When pure atropine in powder is shaken with mercurous chloride and cold water no reaction is apparent, but as soon as the mixture is warmed the white mercurous salt becomes almost black. The development of the reaction is physically aided by adding to the mixture one-fourth its volume of alcohol, which by its solvent action on the atropine promotes contact with the mercurous salt. I find that when atropine is added to a soluble mercurous salt, as the nitrate or acetate, the black precipitate is immediately formed in the cold.

Being uncertain as to the exact nature of the decompositions, I made the following experiments to determine this point:—

*First Experiment.*—0.471 gm. of mercurous chloride, and 1.156 gms. of atropine were weighed, the atropine being, from a calculation, double the molecular quantity required to convert the mercurous chloride into its oxide. The atropine was dissolved in a mixture of 5 volumes water and 3 volumes alcohol, the mercurous salt was added and the mixture warmed and shaken for some minutes; the black powder which formed was transferred to a weighed filter, then well washed with alcohol and water, and dried over sulphuric acid; the precipitate weighed 0.452 gm. This was evidence that the powder was not mercurous oxide alone, or its weight would have approximated to 0.416 gm. Suspecting the powder to contain either atropine, or unchanged mercurous chloride, it was divided into two parts and examined as follows:—The first part was treated with nitric acid, which dissolved the black powder, but left a white insoluble residue containing chlorine and mercury. The second portion of the powder, to test it for atropine, was shaken with potassium hydrate and ether; the ether when decanted and eva-

porated left but a shadowy film. These tests, which I have since confirmed, show that when atropine is digested for a limited time with mercurous chloride, it yields a mixture of mercurous oxide and chloride, and that no atropine enters into the composition of the precipitate.

My attention was next given to the examination of the filtrate and washings of the first part of the preceding operations. They were strongly alkaline, and, when heated to remove alcohol, deposited on cooling some fine crystals, which proved to be pure atropine. The liquor from which the crystals had been removed was found to contain chlorides and combined atropine, mercury was absent. This was evidence that no double compound of the mercurous chloride and atropine had been formed, as is the case with mercuric chloride and atropine.

*Second Experiment.*—It was made to ascertain the reaction between atropine and a soluble mercurous salt. 0.400 gm. of mercury was dissolved in cold nitric acid and treated with atropine in excess; the abundant black precipitate which formed was allowed to subside. The decanted solution on examination was found to consist of free atropine and nitrate of atropine, mercury was absent. The black precipitate, carefully washed and dried, weighed 0.406 gm. and on analysis proved to be mercurous oxide with a small portion of free mercury; the low yield—0.406 instead of 0.416 gm. which it should have approximated to—is to be accounted for by the ease with which mercurous oxide parts with its oxygen on drying.

The second experiment is quite in harmony with the first, differing only in the completeness of the reaction, and shows the change to be one of ordinary double decomposition. I find that the reaction with calomel is proportionate to the length of time it is subjected to warm digestion with the atropine.

It was particularly noticed in the second experiment that a considerable quantity of atropine had to be added before the mercurous salt gave a precipitate. Seeking the cause of this I found it due to the fact that mercurous salts diluted with water yield a mixture of acid and basic salt, and the acid salt must be neutralized by a portion of atropine before reduction can take place. This property of mercurous salts lessens, to some extent, the delicacy of the reaction, and decreases its value as a test, but I find large dilution is in a great measure a remedy for the acidity.

To determine to what extent the reaction can be used as a test for atropine, and the best conditions for applying it, I made some experiments, of which the following gave the best result:—Dissolve 0.208 gm. of fresh precipitated mercurous oxide very carefully in dilute nitric acid, avoiding excess; it is better to leave a trace of oxide undissolved; now dilute the product to 78 c.c. with water, which gives a solution containing nearly one-third per cent. mercurous nitrate. Prepare a 1 per cent. solution of atropine, by dissolving the pure alkaloid in a mixture of 20 volumes alcohol and 80 volumes water. On mixing drops of each of the solutions on a watch glass, resting on a sheet of white paper, a black precipitate is at once produced, consequently indicating less than 0.001 gm. of atropine. If the test be done in a test tube with 1 c.c. of each solution, the blackening is rendered more apparent, owing to the greater volume of precipitate. That the alcohol has no influence on the reduction was proved by a negative experiment, also by the fact that a hot simple aqueous solution of atropine, made by boiling, reacts powerfully with mercurous nitrate.

Experiments made with mercurous acetate did not give such good results as the nitrate.—*Phar. Jour. and Trans.*, March 6, 1886, p. 762.

## THE ALCOHOLIC EXTRACT OF THE ROOT OF ATROPA BELLADONNA.<sup>1</sup>

BY PROFESSOR WYNDHAM DUNSTAN AND FRANCIS RANSOM.

Since the completion of the last part of this inquiry<sup>2</sup> an alcoholic extract of the root of *Atropa Belladonna* has been made official in the new British Pharmacopœia. In the present paper the results of chemical experiments are described, which were instituted for the purpose of (i.) devising a satisfactory method of estimating the total alkaloid, and (ii.) determining whether the extract as met with in commerce varies

<sup>1</sup> Read at an Evening Meeting of the Pharmaceutical Society, Wednesday, March 10, 1886.

<sup>2</sup> The papers already published are "The Assay of *Atropa Belladonna*. Part I. The Estimation of the Alkaloids in the Root of *Atropa Belladonna*." Part II. "The Estimation of the Alkaloids in the Leaves of *Atropa Belladonna*." "Chemical Report on the Pharmaceutical Preparations of *Atropa Belladonna*. Part I. The Alcoholic Extract of the Leaves of *Atropa Belladonna*."—See *Amer. Jour. Pharm.*, 1884, p. 279, and 1885, pp. 532 and 534.

to any considerable extent in alkaloidal strength. In a previous paper read before this Society (see AM. JOUR. PHAR., 1884, p. 279), we have described a method by which the quantity of alkaloid in the root of *Atropa Belladonna* may be accurately ascertained. The uniformity in the alkaloidal strength of the extract prepared from the root is, however, dependent not only upon the corresponding uniformity in the root, but also upon the solvent which is employed, and the manner of its employment.

*The Estimation of the Total Alkaloid.*—It was in the first place necessary to devise an accurate process for the estimation of the total alkaloid, and one which should, if possible, be free from complexity. This we have succeeded in doing by means of a modification of the process which was employed for the same object with the root itself. The method now proposed consists in dissolving about 2 grams of the extract with a gentle heat in water acidulated with hydrochloric acid. The liquid is filtered, and the residue washed with dilute hydrochloric acid until the washings yield no precipitate with a solution of iodine in potassium iodide. The clear liquid is then rendered alkaline with ammonia, and extracted with chloroform until nothing further is removed. Two separate extractions with half its volume of chloroform are usually sufficient for this purpose. The chloroform is next twice agitated with its own volume of water acidulated with hydrochloric acid. It now only remains to render this liquid alkaline with ammonia, and to twice extract it with half its volume of chloroform. The chloroform, when spontaneously evaporated, yields a residue of the crystalline alkaloids (atropine and hyoscyamine), or when evaporated at 100° C. a residue of fused alkaloids which should be dried until it has a constant weight. In these experiments no advantage is gained by evaporating the liquid and drying the residue at a lower temperature, for we have found that a residue so prepared undergoes no appreciable decomposition at the higher temperature of 100° C. That the residue obtained in this way is entirely alkaloidal in its nature was proved by the method of precipitation as periodide, which has been described in a previous paper. The following results may be cited:—

	Weight of alkaloidal residue taken.	Weight of alkaloid recovered.
a.....	0.057	0.054
b.....	0.018	0.0145
y.....	0.072	0.0695

*Examination of Commercial Specimens.*—The amount of alkaloid in various commercial extracts was now determined, with the following results.—

*Analyses of the Alcoholic Extracts of the Root of Atropa Belladonna met with in Commerce.*

Number of extract.	Per cent. of alkaloid in normal extract.	Per cent. of alkaloid in dry extract	Per cent. of water.
I.....	1.75	2.08	16.0
II.....	1.85	2.36	21.4
III.....	3.0	3.60	16.8
IV.....	4.45	5.67	21.6
V.....	3.20	4.0	20.0
VI.....	3.65	4.4	16.8
VII.....	3.0	3.55	16.0
VIII.....	3.6	4.28	16.0
IX.....	1.65	2.04	17.7

The quantity of alkaloid has been calculated in the normal extract that is in the preparation as prescribed and dispensed, and therefore indicates the difference in strength which is experienced in actual practice. The quantity of alkaloid has also been calculated in the dry extract to admit of an accurate comparison of the variations in alkaloidal content which arise from causes other than differences in consistence.

The great variations which these analyses disclose can scarcely be entirely due to a corresponding variation in the alkaloidal content of the root. They are, no doubt, in great part due to differences in the method of preparing the extract, and especially to the relative quantities of alcohol and water which are employed. The method of the British Pharmacopœia consists in percolating with alcohol and subsequently with water to displace the spirit. The water dissolves from the root much albuminoid and mucilaginous matter left undissolved by the spirit and the extract will be greater in bulk, though weaker in alkaloid, than when alcohol alone is used and removed from the marc with a filter-press.

An extract was prepared from a specimen of root (containing about .3 per cent. of total alkaloid) with alcohol alone. It contained 2.8 per cent. of total alkaloid. When an extract was prepared as directed by the British Pharmacopœia, only 1.7 per cent. of alkaloid was found in the product. Hence it is clear that in order to prepare extracts that

shall be uniform in alkaloidal strength, it is necessary to determine by experiment the kind and quantity of the solvent which should be used. This we hope to be able to do.

This extract contains in addition to the alkaloids atropine and hyoscyamine, chrysotropic acid,  $C_{12}H_{10}O_5$ , probably a naphthalene derivative which causes alkaline solutions of the extract to have a distinct fluorescence (Kunz, *Arch. Pharm.*, [3]. xxiii., 722). It also contains much dextrose, and we have recently obtained evidence of the presence of another alkaloid, which is being further investigated. —*Phar. Jour. and Trans.*, March 13, 1886, p. 777.

### ERGOT OF DISS.

By E. M. HOLMES, F. L. S.,

Curator of the Museum of the Pharmaceutical Society.

During the last month a fine specimen of this ergot attached to its host plant, was presented by Professor Léon Soubeiran, of Montpellier. At the present time, when ergot has doubled in price, this variety seems to demand a fuller notice than was given of it some years ago in the Report on the Materia Medica of the Paris Exhibition (*Phar. Jour.* [3], ix, p. 84).

The ergot of diss derives its name from the reed on which it grows, *Ampelodesmos tenax*, Link, which is called diss by the Arabs of Algeria. The plant is very common on all the litoral region of Algeria, and is found also in Corsica, Sicily and Italy.

It is known to botanists by the following synonyms: *Arundo ampelodesmos*, Cyr. Neap.; *Arundo festucoides*, Desf.; *Arundo mauritanica*, Poir.; *Arundo tenax*, Wahl; *Donax tenax*, Pal. de Beau. It is figured in Desf. "Atlas," I, t. xxiv.; Cyr. Neap., t. xii.

The plant grows from 6 to 10 feet high, and has a spreading or turfy habit of growth. The panicles are elongated, somewhat interrupted and pendulous, or curved towards the summit. The leaves are very tough, straight, elongated and channelled, and acute at the apex, the upper surface and the margin being rough to the touch. The rhizome has recently been introduced into use in homœopathic medicine. The ergot, which is found on this plant, was first detected in 1842 by M. Durieu de Maisonneuve, a member of the Scientific Commission of Algeria. It differs from ergot of rye in being barely half its diameter, but twice or thrice its length. It varies, however,

considerably in size, from 3 to 9 centimeters in length, and from 2 to  $2\frac{1}{2}$  millimeters in diameter, this ergot being probably larger in proportion to the size of the seed on which it grows than any other, except, perhaps, that of the Timothy grass (*Phleum pratense*, L.).

Shortly after the discovery, by Tulasne, of the mode in which the sclerotium or ergot develops the fructification of the fungus known as *Claviceps purpurea*, M. Durieu de Maisonneuve, following the process adopted by Tulasne, cultivated the sclerotium of the ergot of diss and obtained the same fructification that is produced by the ergot of rye. Notwithstanding the difference in size and shape of these and of the ergots of several other grasses, it would appear that all that have yet been cultivated must be referred to the same fungus.<sup>1</sup> If this be true, it becomes an important fact in its relation to agriculture, since unless ergot in grasses be kept down or destroyed, the crops of cereals must suffer. That the different forms of ergot possess the same properties appears evident from the injury to cattle from ergotized grasses that has been reported of late years.

The ergot of diss, when small, is slightly curved, but when long (6-9 centimeters), it takes a spiral turn from right to left, the longitudinal furrows being present on the inner face; being of less diameter than ergot of rye it is dryer and more brittle. It is collected in June, July and August during dry weather. If collected later the sun appears to have an oxidizing effect on the ergot. In September the ergot is found to contain less oil. In a dry place it keeps well, being less hygroscopic than ergot of rye. M. Lallemand, of Algiers, who introduced this ergot into use in medicine in 1860, says that he has kept it for three years without any visible alteration, and has never noticed on it the acarus which attacks the ordinary ergot of commerce. He remarks, however, that the acarus does not attack ergot of rye so long as it is dry, but appears as soon as the drug becomes damp.

M. Lallemand (to whose instructive paper on the subject, published in 1862, I am indebted for most of the information here given), has made a chemical examination of the ergot of diss. He finds that the oily fluid exhausted by chloroform, ether or bisulphide of carbon,

<sup>1</sup> The ergots of the following grasses have been referred to *Claviceps purpurea*, Tulasne:—*Psamma arenaria*, *Lolium perenne* and *L. temulentum*, L., *Triticum sativum* and *T. repens*, *Avena elatior*, *Brachypodium sylvaticum*, *Dactylis glomerata*, *Alopecurus agrestis*, *Glyceria aquatica*, and *G. fluitans*, *Anthoxanthum odoratum*.

separates into two layers. The upper is not saponifiable, and if distilled it is partly decomposed. The lower layer is of a thick consistence and holds in suspension opaline flakes, apparently of resinous matter. It is inflammable and becomes brown when heated. Administered to a dog both oils produced poisonous symptoms, causing vomiting, slowness and weakness of the pulse, extreme thirst and feebleness of the hind legs. M. Lallemand agrees, therefore, with those who consider the oil to be poisonous, and who believe that it should be removed from ergot.

By treating with boiling alcohol the residue left after exhaustion by ether, reducing the alcoholic liquid to a small volume and adding to it distilled water or a few drops of nitric acid, the ergotin of Wiggers is precipitated. This appears to be of the nature of an acid resin, since it is insoluble in hot water and ether, soluble in cold, but still more readily in boiling alcohol; also in caustic, but not in carbonated alkalies. It also dissolves in sulphuric and acetic acid, coloring these liquids.

M. Lallemand finds that the ergot of diss contains 2.30 per cent. of this ergotin and 30.60 per cent. of the oils; but that samples of ergot gathered in the same week in different localities yield different percentages of these constituents.

Ergotin prepared as above described, washed with distilled water and dried, presents the appearance of a reddish-brown powder.

The extract called ergotin by Bonjean can be obtained from the ergot of diss as follows: The powdered drug is moistened with distilled water and allowed to swell for three or four hours. It is then packed lightly in a percolator and distilled water allowed to pass through it; but unless the powder has swollen to its full extent before packing, filtration becomes impossible.

The percolate is evaporated as soon as practicable on a water-bath or at a low temperature, and when reduced to the original weight of the ergot, it is filtered to separate the albuminous matters that are precipitated by the heat employed. The filter is washed with distilled water and the washings added to the filtrate, which is again evaporated to a clear syrup. To this is added twice its weight of 86° alcohol, by which gummy matters are precipitated. The decanted liquor is again reduced to a syrupy consistence. Thus treated the ergot of diss yields a little over one-sixth of its weight of fluid extract.

This extract, or ergotin of Bonjean, is hygrometric, of a clearer brown-red than that made from ergot of rye. At first the taste is sweet, then slightly acid. It is very soluble in water, and the solution reddens litmus slightly.

The above preparations of ergot of diss have been employed by Drs. Fourmeaux, Lelièvre and Charbonnier. M. Lallemand records two cases, one in which the powdered ergot was given as a parturient in two doses of 0.50 gm. with an interval of twenty minutes with excellent results, and the other in which the fluid extract was given in a severe case of hæmoptysis, and at once arrested the bleeding, which did not recur again. The ergot of diss is alleged to be twice as strong as the ergot of rye, only half the dose being necessary to produce the same effect. It can be obtained at a much lower price, as it is abundant and easily collected. Being less hygroscopic and not readily attacked by acari, and apparently possessing properties identical with those of ergot of rye, it seems worthy of the attention of the medical profession in this country.—*Phar. Jour. and Trans.*, Feb. 13, 1886, p. 684.

#### MINUTES OF THE COLLEGE.

The annual meeting of the Philadelphia College of Pharmacy was held March 29th, 1886; Chas. Bullock, presiding. Twenty-three members in attendance.

The minute of the last stated meeting was read and adopted. The minutes of the Board of Trustees for January, February and March, were read, and, on motion, approved.

The report of the Librarian was read and accepted. Professor Maisch suggested some modification of the report, and, on motion of Professor Sadtler, it was referred back for that purpose.

The report of the Curator was presented and accepted. The statement is as follows:

"That the cabinet collection is in good condition. Numerous additions of rare specimens have been made during the year. The collection of pharmaceutical specimens has been increased, and the Curator takes this opportunity of again calling attention to this subject by requesting the members to contribute specimens of such pharmaceutical preparations as may be made by new or improved formulæ. A collection of this kind would, in time, become very interesting by showing the permanency, or changes, which would take place in such preparations. New apparatus in the form of "Carré" ice machines have also been received, but, owing to imperfect packing, some damage has been done, which must be repaired before the apparatus will be fit for exhibition. As heretofore ample opportunity was afforded students of inspecting the collections during the lecture courses.

Respectfully submitted,

CHAS. FRED. ZELLER, Curator."

The report of the Editor, Professor Maisch, was offered, accepted, and, as usual, referred to the Committee on Publication. The language of the report is as follows:

"The Editor respectfully reports that during the past year ending with the month of March, the AMERICAN JOURNAL OF PHARMACY published *sixty-four* original papers, an increase of *one* over the previous year. This sum does not include the miscellaneous "Gleanings" prepared monthly by Mr. J. Rob. Moechel and by Mr. Geo. H. Ochse, Ph. G., nor the Gleanings in Materia Medica, various items, Editorials, Reviews, and other notices prepared by the Editor. The publication last year of the New Mexican Pharmacopœia offered an excellent opportunity of studying the pharmacy as practised in a neighboring country; accordingly considerable space was devoted to the formulary of that pharmacopœia, and more particularly to its materia medica, all that seemed to be of importance, or of interest, being published in a condensed form. Deducting these, and the remaining original papers contributed by the Editor—nineteen in all—there remain forty-five papers, of which number eleven were contributed by only six members of the College, showing a greater lack of interest in the Journal on the part of the members of this College than has been experienced by the Editor during any one year since he had been first elected to this position fifteen years ago. Eight of these papers were read at the pharmaceutical meetings. The remaining original contributions consisted of nineteen papers containing more or less condensed abstracts of forty-two theses, and of fifteen valuable papers contributed by eight non-members.

The Editor desires to express his obligations to the contributors, and the hope of a continuance of their valued interest in the Journal.

Respectfully submitted,

JOHN M. MAISCH, *Editor.*

The report of the Committee on Publication was called, and, in response, the chairman submitted the following, which was, on motion, accepted and referred.

"The Publication Committee respectfully report that they have attended to the duties assigned them during the year just closed. The Journal has been issued with its usual promptness; the standard attained by the Journal as an able and faithful exponent of the progress of pharmacy and allied sciences, we think, has been maintained.

The vast number of pharmaceutical publications now issued, and the rigid supervision by the Committee of all advertisements, restricts, somewhat, our income from what might be a source of profit; but the admission of which, we think, would not be in accord with the objects for which the Journal was established. The Committee have endeavored to reduce the expense of publication as far as would be consistent with true economy—for that purpose they invited proposals for printing, and for paper, and binding. The changes made, while not impairing the quality and general appearance of the Journal will result in a considerable annual saving. We would call the special attention of all graduates of our College to the Journal as a desirable source of valuable and new information for them, and an excellent channel to communicate their scientific observations to the pharmaceutical world. The Editor's and Business Editor's reports, which accompany this, will give the details of our work.

Respectfully,

H. N. RITTENHOUSE, *Chairman Public. Com."*

The Secretary here read a financial report of the Publishing Committee as shown by the statement of the Business Editor, as also an accompanying similar report of the Treasurer of the Committee, which latter was, by motion, directed to be placed on the minutes. This report gives, as has been noted, the business condition of this department of the College, and presents a very satisfactory statement. The account had been audited and vouched. In order to adjust these accounts, and furnish the Publication Committee with the usual available capital, orders were, on motion, directed to be drawn on the Treasurer of the College, and on the Treasurer of the Publication Committee, respectively.

The Committee on Deceased Members reported the decease of Peter Williamson, one of the original members of the College, and secretary of the meeting held February, 1821, at which the College was organized. A full report on his life will be presented at a subsequent meeting.

The Treasurer of the College reported the names of two members, delinquents in payment of dues; on motion of Mr. Robt. England, these gentlemen were debarred from further membership.

A communication was received from Isaac Tull, now resident of Kingston, N. C., resigning membership, which resignation was, on motion, accepted.

William McIntyre, in a communication, presented his resignation as a member of the Board of Trustees, assigning want of time to properly attend to the duties. On motion of William B. Webb the resignation was accepted.

This being the date of the annual meeting, the President ordered an election to be held for Officers, Trustees, and Standing Committees. The election resulted as follows:

*President*, Charles Bullock.

*Treasurer*, Samuel S. Bunting.

*1st Vice-President*, Robt. Shoemaker. *Recording Sec't'y*, William B. Thompson.

*2nd Vice-President*, William J. Jenks. *Corresp. Sec't'y*, Dr. A. W. Miller.

*Board of Trustees for three years.*

John M. Maisch,                      Saml. P. Sadtler,  
Robt. England.

*Trustee for unexpired term of William McIntyre, resigned*, Howard B. French.

*Publication Committee.*

John M. Maisch,                      T. S. Wiegand,  
H. N. Rittenhouse,                  James T. Shinn,  
Charles Bullock.

*Editor*, John M. Maisch.

*Librarian*, Thos. S. Wiegand.

*Curator*, Chas. Fred. Zeller.

The gentlemen here designated were appointed by the Chairman as delegates to the Pennsylvania Pharmaceutical Association, which meets at Lebanon, in June: Alonzo Robbins, Gustavus Pile, Wallace Procter, C. F. Zeller and Henry Trimble.

The meeting now, on motion, adjourned.

WILLIAM B. THOMPSON, *Secretary*.

## MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, March 16, 1886.

The sixth meeting of the series was called to order by the actuary, and Mr. Wm. B. Thompson was elected chairman. The minutes of the last meeting were read, and, requiring no corrections, stand approved.

The report of the Commissioner of Education for the years 1883 and 1884 was presented by the actuary, it having been received since last meeting. It was directed to be placed in the library.

A paper on *Syrupus Aurantii*, by Geo. M. Beringer, Ph.G. of Class 1880, was read by the actuary, and, on motion of Mr. England, was referred to the Publication Committee. The reading elicited quite a discussion upon the subject. Mr. Heinitsh stated that it was his custom to keep a stock bottle of tincture made from fresh peel, and thus was enabled to prepare a syrup at all times. Mr. Robert England stated he was in the habit of making a tincture of the fresh peel deprived of the inner portion with a mixture of two parts of alcohol and one of water, using about two ounces of the fresh peel to ten ounces of fluid and making the measure up to a pint with sugar; this is used almost exclusively in the soda water department, or for flavoring in prescriptions, and really is more of an elixir than a syrup. Mr. Zeller was asked whether it was not thought necessary to have a syrup that was pharmaceutically compatible with the various remedies frequently prescribed in such connection. This was answered by the statement that the syrup made as suggested, did not react unfavorably with the ferruginous salts.

Mr. Walling asked if any of the members had found trouble from the presence of *ultramarine in sugar*; it has been a source of annoyance to him, not only as introducing a foreign color, but giving after a short time an odor resembling that of stale eggs. The same question had been asked at one of the recent meetings by Mr. Procter, and Mr. Webb said that one large refiner stated that he did not use ultramarine, but analysis showed an abundance of it present in the sugar sold by this firm. Several members said that the sugar refined at the Franklin refinery did not show it, but one present who had used five times as much as almost any other present, had been greatly annoyed by it when using this brand. Mr. England stated that he had gotten rid of the ultramarine by adding a small amount of isinglass dissolved and added to the syrup which then had to be boiled. This acted thoroughly well.

Mr. Walling asked what substance could be advantageously used as a *deodorizer* to a liquid in which raw hides had been steeped; the discharge of this water into the sewers gave great offence to some of the neighbors, and it was desirable to be able to prevent the ground of complaint. Sulphate of iron in solution slightly acidulated was recommended to be tried.

Mr. Thompson exhibited *crystalline carbonate of ammonium* which he thought desirable for filling smelling bottles, as it retained its strength as long as the salt remained. It was made by placing ordinary carbonate of ammonium in a jar and covering it with strong water of ammonia; after standing a long time—for it had been forgotten—it was found to be crystalline and quite dry when freed from the surrounding liquid.

There being no further business, on motion adjourned.

T. S. WIEGAND, Registrar.

## PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

*Philadelphia College of Pharmacy.* The plan of holding two monthly examinations for the junior students, with the view of determining their progress and their fitness for entering upon the final junior examination, at the end of the course, was again followed during the past session, and its efficiency, as well as its advantage to the students, proved, in the main, satisfactory. The questions at the two preliminary and the final junior examination, which latter was held on Saturday, February 13th, were as follows:

## BOTANY AND MATERIA MEDICA.

1. Explain the manner of length-growth of the *root* and of the *rhizome*. How may a rhizome be distinguished from a root by external marks and by the structure?

2. Name and describe briefly the *tissues* found in *leaves*, commencing with the upper surface.

3. What is meant by *definite*, and by *indefinite inflorescence*? Give several forms of each kind, and briefly describe them, or illustrate them by diagrams.

4. Define a *fruit*, and give the characters of the following kinds of fruits, stating in each case the nature of dehiscence: *Berry, Drupe, Pome, Follicle, Legume, Capsule*.

5. *Levant Wormseed*. Give the officinal name of the drug; the part used; the name of the plant, its habitat and its natural order. Describe the drug, and state how it may be readily distinguished from American Wormseed. What are its medicinal properties, and in what doses is it given? Name its active principle; state the effect of light upon this principle, and the medicinal dose of the latter.

6. How do *monocotyledonous plants* differ from *dicotyledonous plants* in the arrangements of the woodbundles in the stem; in the venation of the leaves and in the embryo. Name some of the natural orders belonging to the monocotyledons; also some medicinal or otherwise useful products yielded by each one of the natural orders enumerated by you.

## PHARMACY.

1. If the *specific gravity* of hydrochloric acid is 1.160, what will be the *weight* in grammes of a litre? What will be weight in grains of 500 c. c. of the acid.

2. Write out a description of a *pharmaceutical balance* of the most approved construction, explaining and answering the following queries, adding such information as you deem necessary to complete the description: What should be the relation of the centre of gravity of the beam to its point of suspension? What should be the relative distances between the knife edges? Should the knife edges be absolutely parallel to each other, why? What influence has the weight of the beam upon the sensibilities of the balance? Why should the beam be rigid? How would you test a balance to prove its proper construction?

3. If the *weight* of a fluid ounce of each of the officinal liquids is as stated below, what is the *specific gravity* of each liquid?

Phosphoric Acid.....	613.8 grains.
Diluted Sulphuric Acid.....	486.3 grains.
Glycerin.....	569.6 grains.
Mercury.....	6151.9 grains.
Water.....	455.7 grains.

4. Write a composition on the subject of *Percolation*, using your own language, and treating the subject under the following heads: *a. Definition. b. History. c. Principle of Action. d. Advantages over Maceration. e. Description of Perculators and Their Special Uses.*

5. Explain the official process for making *Acidum Phosphoricum* and *Acidum Phosphoricum Dilutum*; name and give the tests for three kinds of phosphoric acid which differ from each other in chemical composition.

6. How is *Sulphurous Acid* prepared for use in Pharmacy? Explain the official process.

#### CHEMICAL PHYSICS AND CHEMISTRY.

1. What is the general effect of *heat* upon all bodies? What is meant by "latent heat"? In what changes of condition is heat rendered latent? Explain the action of a mixture of salt and ice in lowering the temperature.

2. What difference is there in the *electricity* developed by friction, and that developed by chemical action? Describe several of the more important forms of *galvanic batteries*? Which of the batteries mentioned develops the greatest electromotive force?

3. State the distinction between a *binary* and a *ternary molecule*. When is the termination *ide* used? When *ite*? When *ate*? Give examples in each case.

4. What elements belong to the *halogen group*? What is their equivalence? Write the formulas of their hydrogen compounds.

5. What is the chemical formula of *Ammonia*, and what of *Sal Ammoniac*? Write the reaction by which the former is produced from the latter. From what sources may ammonia be obtained?

6. Give the names, chemical formulas and a brief description of the *oxides of Carbon*. What acids are formed from these oxides? Name the salts corresponding and give the chemical formula of one of such salts.

#### QUESTIONS BY THE EXAMINING COMMITTEE.

1. Describe and illustrate by diagram each of the following forms of *Inflorescence*: Spike, Raceme, Corymb, Umbel. Name the different parts of a *complete flower*. Mention three *official flowers*, and give the botanical name and natural order of the plants yielding them.

2. Define *quantivalence* or *equivalence*. Give examples of univalent, bivalent, trivalent and quadrivalent atoms. How can the quantivalence of an element be indicated in its symbol?

3. Give the process including the ingredients used in the official *Liquor Magnesii Citratis*. Exemplify the reaction which takes place by the use of symbols.

4. Describe the processes of *Sublimation* and *Distillation*. Give an example of each process. What is the difference between *Solution* and *Fusion*? Give an example of each process. Describe *Incineration* and *Lixivation* and give an example of each.

#### Specimens.

Chondrus.  
 Cannabis indica.  
 Caryophyllus.  
 Arnice flores.

Aqua Menthae viridis.  
 Tinctura Gentianae comp.  
 Acidum Sulphuricum arom.

Aqua Chlori.  
 Potassii Iodidum.  
 Ammonii Chloridum.

The examination in *Operative Pharmacy* consisted in the making of several preparations requiring the practical application of the processes of percolation, solution and evaporation.

The re-examination of those junior students who failed in the February examination in one or more branches will be held on Wednesday afternoon, September 29th, next, at 3 o'clock.

The examination of the senior students was commenced on Thursday, February 25th, and closed on Tuesday, March 2d, with the practical branches of operative pharmacy and analytical chemistry, as follows:

## MATERIA MEDICA.

A. From what plants is *Bryonia Root* obtained? Give their natural order and habitat. Describe the drug, including its structure. State its medical properties and dose. What other drugs are obtained from the same natural order? Give the medical properties and dose of each.

B. Name the plant yielding *Pink-root*. Give the natural order and habitat of the plant. Describe the drug, including its structure. Name the principal constituents. Give its medical properties, dose, and effects of an overdose. What other article is sometimes sold for the officinal pinkroot, and how may it be distinguished from the latter? In what manner does *Serpentaria* differ, physically, from pinkroot?

C. What is *Butternut Bark*? Name the plant, its natural order, and habitat. When should the drug be collected? Describe the drug, including its structure. Name its principal constituents. Give the medical properties and dose. State the effect of continued boiling upon the virtues of the drug.

D. What is *Jaborandi*? Name the plant, its natural order and habitat. Describe the drug. Give its medical properties and dose. Name an officinal salt, prepared from *Jaborandi*. State the dose of the salt, and some of its characteristics. How may the leaves of *Laurus nobilis* be distinguished from *Jaborandi*?

E. What is *American Wormseed*? Name the plant from which it is procured. Give the natural order and habitat of the plant. Describe the drug. Give its medical properties and dose. Also the officinal name, characteristics and dose of its active principle. How may *American Wormseed* be distinguished from *Levant Wormseed*?

F. What is the botanical name of the *Almond tree*? Its natural order and habitat? Describe the seeds, including their structure. State the difference in the appearance of the two varieties of almond. Name the constituents found in both varieties, and give the proportion of that constituent obtained by expression. Which variety yields a volatile principle, and in what proportion? How is this volatile principle produced? What is its chemical nature? What compound is formed from it on exposure to air?

G. What is *Mace*? Give the botanical name of the plant. Its natural order and habitat. Describe the drug. Give its medical properties and its constituents. What is *Nutmeg*? Give the proportion of its important constituents, and the characters of the volatile principle.

H. Name some of the plants yielding *Aloes*, giving their habitat, and the commercial varieties of aloes yielded by each. How is aloes prepared? Which variety is officinal? Describe the officinal aloes, and state the effect of solvents, and what impurities are frequently present. How do other varieties differ from it? Give a process for preparing aloin.

I. In what tissue is the juice contained which yields *Opium*? How is opium prepared? Describe the officinal opium. State how Persian opium differs from it. How may the following adulterations be detected: starch, gum, extracts? What is the morphine strength of pharmacopoeial opium? Give characteristic tests for the following constituents; morphine, codeine, meconic acid.

K. Give the name, class and habitat of the *Muskdeer*. Describe the *musk-bag*, and its location on the animal. Give the characteristics of good *musk*. State how adulterations may be detected? How may the odor of musk be removed? Give the medical properties and dose of musk.

## THEORY AND PRACTICE OF PHARMACY.

A. Name three officinal liquids for which processes are given in the Pharmacopoeia, which have identical specific gravities. How many avoirdupois pounds are contained in a wine-gallon of either of them. Give the outlines of the method of preparing each.

B. Give the unabbreviated officinal names, ingredients, outlines of processes, and describe the appearance of the following: *Soap Liniment, Syrup*

of *Lactophosphate of Calcium*, *Honey of Rose*, *Diachylon Ointment*, *Blistering Cerate*, *Strengthening Plaster*, *Aromatic Spirit of Ammonia*, *Neutral Mixture*.

C. Give the English names, ingredients, outlines of process, and describe the appearance of the following: *Infusum Sennæ Compositum*, *Liquor Potassii Arsenitis*, *Pulvis Morphine Compositus*, *Syrupus Senegæ*, *Tinctura Benzoini Composita*, *Liquor Plumbi Subacetatis*, *Pilulæ Ferri Iodidi*, *Massa Ferri Carbonatis*.

D. Give the official name, with the ingredients and quantities to make one pint of *Fluid Extract of Veratrum Viride* and *Tincture of Opium*.

E. What is *Glucose*? How does it differ from commercial *Grape Sugar*? Give its chemical formula. How is *Glucose* made commercially? What are its principal uses? Give a distinguishing test for it.

F. Give the manufacturing processes, specific gravity, tests of identity, and purity of *Glycerin*, *Commercial Chloroform*, and *Nitrite of Amyl*.

G. Give the reasons for the following:

1. In the preparation of official tincture of *Chloride of Iron*, why is it directed that the mixture of solution of *Chloride of Iron* and *Alcohol* shall stand in closely covered vessels for three months before being used?

2. Why is test solution of *Nitrate of Barium* directed to be used in testing official *Honey*?

3. Why is *Water of Ammonia* added to the liquids used in making the following preparations: *Pure Extract of Glycyrrhiza*, *Fluid Extract of Senega*, *Washed Sulphur*.

4. Why is *Columba* directed to have the special degree of fineness of powder known as number 20 in the official formulas, for its liquid preparations, instead of the usual degree of fineness of powder directed for other drugs?

4. Why is diluted *Hydrochloric Acid* directed in the official liquid preparations of *Conium*?

H. Define *incompatibility* in its pharmaceutical relations, as applied to extemporaneous solutions. Is incompatibility ever intentional on the part of the prescriber? Illustrate by an example. When should an extemporaneous solution ordered by a physician be filtered, and under what circumstances is it improper to filter such a solution? Is it important to observe any particular order in mixing the ingredients in certain liquid prescriptions? If so, illustrate by an example.

I. What is the physical property that is possessed by *Cacao Butter* that makes it the best basis for *suppositories*? Describe the process of making rolled suppositories by hand. What advantage have moulded suppositories over those made by rolling?

K. State briefly the essential physical requirements of a good pill mass. Under what circumstances does a pill cylinder sometimes split or crumble when rolled? How may a pill cylinder, which is known to be liable to split or crumble, be manipulated (without additions of any kind) so as to avoid such a mishap? State the kind of medicinal substances with which it would be proper to use the following pill excipients: *Water*, *Syrup*, *Glucose*, *Confection of Rose*, *Glycerin*, *Soap*. Describe briefly the processes for coating pills with gold or silver leaf, sugar and gelatin.

### CHEMISTRY.

A. What are the several processes now in use for manufacturing commercial *Carbonate of Sodium*? Give an outline of each. What are the side-products in each case?

B. What is the official name and chemical formula of *Epsom Salt*? What is the official name and chemical formula of *Glauber's Salt*? State the difference in physical properties between the two. What chemical tests would serve to distinguish between them? How can you distinguish between *Zinci Sulphas* and *Epsom Salt*?

C. Describe the metal *Lead*. Mention the technical uses of the metal and its alloys. Mention the salts of *Lead* that are used in pharmacy, and those that are used in technical applications. Give the chemical formulas of three official compounds of *Lead*.

D. Give the chemical names and formulas of *Hydrargyri Chloridum Mite*, *Hydrargyri Chloridum Corrosivum* and *Hydrargyrum Ammoniatum*. State the points of difference between them, and the tests for each, and means of separating them when all are present in a mixture.

E. What tests are characteristic for *Bismuth Salts*? Write the chemical formulas of the normal nitrate and the subnitrate. State how each is produced. Give the formula of the subcarbonate, and state how it is produced.

F. What is the general composition of the natural fats? What compounds predominate in the solid fats? And what in the liquid fats? Write the chemical reaction for the decomposition of the fats by superheated steam. Write the reaction for the formation of a soda soap. Write the reaction for the formation of lead plaster.

G. Give the chemical formula of *Acidum Aceticum*, and two official acetates. Of *Acidum Oxalicum*, and two official oxalates. Of *Acidum Tartaricum*, and two official tartrates. Of *Acidum Citricum*, and two official citrates.

H. Define the class of changes known as *fermentations*, and state what organic compounds are specially subject to them. Enumerate the special varieties of fermentation, and state the products in each case. Write the chemical reactions expressing the changes that take place in these cases.

I. Give the chemical formulas of *Acidum Benzoicum*, *Acidum Salicylicum* and *Acidum Gallicum*. What chemical relationship exists between these three acids? State the sources, both natural and artificial, of these several acids.

K. What is a *Glucoside*? What is an *Alkaloid*? What differences are there in the chemical constitution of the two classes? What analytical tests will show the difference between the two classes?

#### QUESTIONS OF THE EXAMINING COMMITTEE.

A. Name three *acids of Phosphorus*. State briefly the difference in chemical formula between the three varieties of Phosphoric Acid. Explain how the higher varieties may be changed into the lower. Give the basicity of each acid, and state the variety to which the official Phosphoric Acid belongs. Name the official Phosphoric Acids, and give the specific gravity and percentage of absolute acid in each.

B. From what source is *Antimony* obtained? Describe the physical characteristics of the metal. State the chemical composition of *Tartar Emetic*. Name the official preparations into which *Tartar Emetic* enters, and give the amount in each. What other preparations of *Antimony* are official? What preparations of *Arsenic* are official? Name the official liquids which contain *Arsenic*, and give the *Arsenic* strength of each. What is the dose of *Arsenious Acid*? What is the antidote for *Arsenic*? What are the tests for *Arsenic*, and the means whereby it can be distinguished from *Antimony*?

C. Name the ingredients and quantities which enter into the composition of *Compound Cathartic Pills*. Give the botanical name, natural order, habitat and official portion of the plants yielding the vegetable constituents thereof.

D. What is the effect of adding *Hydrochloric Acid* to solutions of <sup>a</sup>*Mercurous*, <sup>b</sup>*Mercuric*, <sup>c</sup>*Lead*, and <sup>d</sup>*Silver Salts*? Give the formula of each of the resulting compounds, and state by what tests they may be distinguished from one another. How may *Corrosive Sublimate* be detected in *Calomel*?

E. Name and describe the official products yielded by *Gossypium herbaceum*. Give the unabbreviated official name, ingredients, and outlines of process, of each preparation into which they enter. What therapeutical properties are attributed to each of these preparations? Give the chemical formula and characteristic properties of each of the three products of the action of *Nitric Acid* on *Cotton*. What is *Pyroxylin* chemically?

F. Name four official solutions of the Salts of Iron. Give the process for the preparation of each, and explain the chemical reactions which occur.

G. Give the official and common names of the medicinal substances obtained from each of the following. State what portion in each constitutes the official drug. Name an official preparation (if any) into which each one enters: *Crocus sativus*, *Gadus Morrhua*, *Cassia elongata*, *Myroxylon Pereiræ*, *Croton*

*Eleuteria, Fraxinus Ornus, Acipenser Huso, Illicium anisatum, Physeter macrocephalus, Allium sativum.*

H. How would you distinguish by chemical tests the *Iodide* from the *Bromide of Potassium*? *Heavy Magnesia* from the *Precipitated Carbonate of Calcium*? *Powdered Borax* from the *Bi-Carbonate of Sodium*? *Epsom Salt* from the *Sulphate of Zinc*?

I. Criticise the following prescriptions, and state whether you would dispense them.

1. R Potass. Iodid..... ʒ iv  
 Hydr. Bichlorid..... gr. iss  
 Strych. Sulph..... gr. i  
 Morph. Sulph..... gr. ii  
 Syrup. Zingiber..... f ʒ ii  
 Aquæ..... f ʒ i

Ft. Mist.

Sig.—A teaspoonful after meals.

2. R Tinct. Ferri Chlorid.  
 Syrup. Simp..... āā ʒ iv  
 Elixir Aurant..... ʒ i  
 Morph. Acetat.  
 Acid. Acetic. Dil..... āā ʒ i  
 Liq. Ammon..... ʒ iv

Ft. Mist.

Sig.—A dessertspoonful every hour.

3. R Sodii Bicarbonat.  
 Hydrarg. Chlorid. Cor... āā gr. v  
 M. Ft. chart. No. i  
 Sig.—Take at once.

K. How would you prepare this prescription? Would you dispense it?

4. R Strych. Sulph..... gr. iss  
 Aloin..... gr. iii  
 Iodin..... gr. v  
 Ferri Reducti..... ʒ i  
 Ext. Quassia..... gr. xlv  
 Ft. pil No. xxx.  
 Sig.—Take one pill after each meal.

Criticise this prescription and state whether you would dispense it:

5. R Potass. Cyanid..... ʒ ii  
 Morph. Sulph..... gr. ii  
 Acid. Citric..... ʒ ii  
 Syr. Prun. Virgin..... f ʒ viii  
 M. Ft.

Sig.—For cough, take a teaspoonful every four hours.

Write out a direction for the preparation of this prescription, and state whether you would dispense it:

6. R Acid. Arsenios..... grs. ii  
 Potass. Bicarbonat..... grs. ii  
 Tinct. Lavand. Comp... ℥ vj  
 Aq. Destil..... grs. cxcv  
 M. Sec. Art.

Sig.—Give five drops three times daily.

*Specimens.*

MATERIA MEDICA.

Ipecacuanha.  
 Aconitum.  
 Santalum rubrum.  
 Cascarilla.  
 Castanea.  
 Buchu (short).  
 Cannabis indica.  
 Pimenta.  
 Staphisagria.  
 Ergota.

CHEMISTRY.

Potassii Iodidum.  
 Sodii Hyposulphis.  
 Ammonii Chloridum.  
 Plumbi Oxidum.  
 Cupri Acetas.  
 Zinci Acetas.  
 Acidum Citricum.  
 Amylum.  
 Alcohol.  
 Benzinum.

PHARMACY.

Pulvis Rhei comp.  
 Aqua Fœniculi.  
 Infusum Digitalis.  
 Vinum album fortius.  
 Tinct. Gentianæ comp.  
 Tinctura Vanillæ.  
 Extract. Ergotæ fluid.  
 Extractum Gentianæ.  
 Massa Ferri Carbonatis.  
 Sodii Salicylas.

COMMITTEE.

Valeriana.  
 Scoparius.  
 Prunus virginiana.  
 Resina.  
 Anisum.  
 Acetum Scillæ.  
 Aqua Menthæ pip.  
 Liniment. Saponis.  
 Potassii Nitras.  
 Sodii Boras.

## OPERATIVE PHARMACY.

1. *Suppositories.*

R Ext. Stramonii.

Acidi Tannici.....ââ gr. iij

Plumbi Carb..... gr. vj

Liq. Plumbi S. Acet..... gtt. xij

Creasoti. .... gtt. iij

Ol. Theobromæ..... gr. c

Make six suppositories by rolling,  
without moulds.2. *Solution.*

Ferri Sulph..... 480 gr.

Acidi Sulphurici ..... 1 fl. dr.

Acidi Nitrici..... 1 fl. dr.

Aque q. s. ft..... 2½ fl. oz.

Sig.—Make Solution of Tersulphate  
of Iron by the official process.*Ointment.*

3. Hydrargyri.....gr. xxxvij.

Acidi Nitrici..... ½ fl. dr.

Acidi Nitrici..... ¾ fl. dr.

Ol. Adipis..... 1 fl. oz.

Make Ointment of Nitrate of Mer-  
cury by the official process.*Pills.*

4. R Ext. Coloc. Comp.....gr. xxiv.

Abstract. Jalapæ.....gr. xvij.

Hydrarg. Chlor. Mit.....gr. xvij.

Cambogiæ Pulv.....gr. iv.

Make 18 pills.

*Powders.*

5. R Acidi Tannici.....gr. xii.

Ft. pulv. et div. in chart. No. XII.

In *Analytical Chemistry* the candidates were required to analyze qualitatively a solution containing from four to six different salts of mineral and organic acids.

Twelve candidates were present (fourteen entitled) in the competitive examination of drugs with the microscope for the John M. Maisch prize, they having attained the grade very satisfactory in the examination in materia medica, including specimens. Mr. J. L. Fisher recognized the largest number, nine out of the following thirteen microscopic specimens, most of them tranverse sections: Ipecacuanha, Menispermum canadense, (rhizome), Cimicifuga (rootlet), Dulcamara, Salix, Caryophyllus, Carum, Aurantii cortex, Stramonii semen, Kamala, Calumba, Veratrum (rhizome) and Cascarilla.

The following 172 candidates passed successfully in all branches and were recommended to the Board of Trustees for the degree of Graduate in Pharmacy (Ph. G.):

Abell, Wm. Warner, Pennsylvania, *Pimentæ Folium.*Adams, Ellsworth Smith, New Jersey, *Troches.*Albright, Charles Wesley, New Jersey, *Chloral-Camphor.*Alexander, Everett Vincent, Ohio, *Starch.*Arnold, Claude Horace, New York, *Potassii Bitartras.*Backes, Thomas Joseph, Pennsylvania, *Cinchonidinæ Sulphas.*Baker, David Wiley, New Jersey, *Hæmatoxyton.*Barlow, Louis Eugene, Ohio, *Cork.*Barrowman, Wm. G., Pennsylvania, *Oleum Olivæ.*Becker, Harry Vane, Indiana, *Chloral and Menthol.*Bell, Robert Matthew, Pennsylvania, *Hydrastis Canadensis.*Berret, Arthur, New Jersey, *Imperfect Officinal Syrups.*Bickley, Milton Horace, Pennsylvania, *Pycnanthemum Linifolium.*Bicknell Robert Cooke, Tennessee, *Chlorinated Lime.*Birt, Frank John, New Jersey, *Gossypium.*Bonnet, Charles Frederick, Ohio, *Myristica.*Bowman, Lin Light, Pennsylvania, *Anæsthetics.*Boyd, John Charles, Illinois, *Dialysed Iron.*Braddock, Jr., Charles Shreve, New Jersey, *Aluminum.*

- Brecht, Morris Winfield, Pennsylvania, *Pharmaceutical Requisites*.  
 Brown, Albert Edward, Illinois, *Erythroxyton and Derivatives*.  
 Brown, Frank L., Pennsylvania, *Suppositories*.  
 Buckley, James Edward, Washington Territory, *Cerates and Ointments*.  
 Bullock, William Anthony, Pennsylvania, *Relation of Pharmacy to Physics*.  
 Burg, John Dellinger, Pennsylvania, *Olives and Olive Oil*.  
 Burke, Wm. Thompson, Pennsylvania, *Compounds in Pharmacy*.  
 Burkhart, Herman Adolphus, Pennsylvania, *Chlorophyll*.  
 Cafky, Wm. Walter, Illinois, *Boroglyceride*.  
 Cahill, Daniel Wm., New York, *Fraxinus Americana*.  
 Campbell, Harry Belting, New Jersey, *Calendulated Boric Acid*.  
 Cheney, Walter Bowden, Connecticut, *Hamamelis Virginica*.  
 Cohen, Nathan Alexander, Pennsylvania, *Hamamelis Virginica*.  
 Cohn, Arthur H., Wisconsin, *Smilax Rotundifolia*.  
 Colborn, Isaiah Grant, Pennsylvania, *Hydrochlorate of Cocaine*.  
 Commings, Charles Samuel, Pennsylvania, *Honey*.  
 Craig, Edwin Sherman, Ohio, *Glycerinum*.  
 Dallett, Prosper Martin, Pennsylvania, *Pills*.  
 Danzberger, George Wm., Pennsylvania, *Responsibilities of a Pharmacist*.  
 Davis, Alfred Ivins, New Jersey, *Druggists' Clerks*.  
 Davis, William Harry, Pennsylvania, *Glycerinum*.  
 Deibert, Thomas Irwin, Pennsylvania, *Kalmia Angustifolia*.  
 DeKalb, Hugh Leonard, Pennsylvania, *Quinine Pills and Excipients*.  
 Donough, Wm. Edgar, Pennsylvania, *Toxicology*.  
 Downes, Clarence Eugene, Maryland, *Boroglyceride*.  
 Downes, Randolph Hinson, Maryland, *Electricity*.  
 Drew, A. Damer, Virginia, *Nickel and its Haloid Salts*.  
 Duffie, Silas Johnstone, South Carolina, *Syrup of Tolu*.  
 Dunn, Frederick, Pennsylvania, *Syrupus Ipecacuanhæ*.  
 Dunn, Walter, Pennsylvania, *Digitatin*.  
 Eisenhart, Foster Benjamin, Pennsylvania, *Creosote*.  
 Escott, Charles Edward, Michigan, *Gum from Myrrh*.  
 Evans, George Brinton, Pennsylvania, *Camphor Water*.  
 Fahey, Edward H., Delaware, *Vanilla*.  
 Fetter, Harry Herman, Pennsylvania, *Arsenicum*.  
 Fischer, Albert Martin, Pennsylvania, *Brayera Anthelmintica*.  
 Fisher, Jacob Livingood, Pennsylvania, *Ustilago Maydis*.  
 Fletcher, Oscar Conrad, Kentucky, *Colleges of Pharmacy*.  
 Flynn, John Joseph, New Jersey, *Resins and Oleo-Resins*.  
 Fritsch, Harry, Pennsylvania, *Podophyllin*.  
 Gardner, Frank Edwin, Pennsylvania, *Aquæ Medicatæ*.  
 Giffin, Harry Riggeal, Pennsylvania, *Vanilla*.  
 Grant, James Smith, Maryland, *Isinglass and its Adulterations*.  
 Greenawalt, Wm. Grant, Pennsylvania, *Botany and its Value to Pharmacists*.  
 Hall, Frank Devie, Ohio, *Sulphur Precipitatum*.  
 Hall, Harry Newbury, Mexico, *Camellia Thea*.  
 Harrigan, John William, Pennsylvania, *Percolation of Resins and Gum Resins*.  
 Hauck, Allen Wesley, Pennsylvania, *Present of Pharmacy*.  
 Heim, Henry Lewis, Pennsylvania, *Grindelia*.

- Heller, Charles Tompkins, New Jersey, *Bryonia*.  
 Henderson, James Rutledge, South Carolina, *Gossypium Herbaceum*.  
 Herring, Doane, North Carolina, *Sulphate of Manganese*.  
 Hewitt, Charles Ellsworth, Indiana, *Lappa Officinalis*.  
 Hiecke, William, Wisconsin, *Analysis*.  
 Hiestand, John Summy, Pennsylvania, *Aspidosperma Quebracho*.  
 Hinkle, James, New Jersey, *Coccus*.  
 Hinterleitner, George Gustav, Pennsylvania, *Detannation of Cinchona Preparations*.  
 Hoffman, George Wm. Jacoby, Indiana, *Fraxinus Americana*.  
 Holberg, Ferdinand, Mississippi, *Nance Bark*.  
 Holland, Edgar Atwood, Pennsylvania, *Pharmacy*.  
 Hulshizer, John Clayton, New Jersey, *Cypripedium Pubescens*.  
 Johnson, Seth Caleb, New Jersey, *Potassii Bitartras*.  
 Johnson, Frank Elmer, Pennsylvania, *Electricity*.  
 Jones, Samuel Stephen, Pennsylvania, *Xanthorrhiza Apifolia*.  
 Kalteyer, Moritz, Texas, *Sophora Speciosa*.  
 Kelly, Wm. Daniel, Minnesota, *Chloride of Cocaine*.  
 Keogh, Francis Joseph, Pennsylvania, *Celluloid*.  
 Keyes, Frank Williamson, Pennsylvania, *Vanilla*.  
 Kiedaisch, Jr., John Frederick, Iowa, *Myrrha*.  
 Kieffer, Otto, de, Pennsylvania, *Coca*.  
 Kirkham, Walter Agan, Pennsylvania, *Useful Hints to the Pharmacist*.  
 Kizer, Thomas Joseph, Indiana, *Eriodictyon Californicum*.  
 Klopfenstein, John A., Ohio, *Coto*.  
 Knight, Howard, Pennsylvania, *Pharmaceutic Appliances*.  
 Knisell, Sidney Lackey, New Jersey, *Our Profession*.  
 Koch, Charles Herman, Pennsylvania, *Emulsions*.  
 Kroh, Harry Kieffer, Pennsylvania, *Pepsin vs. Bismuth*.  
 Kurtz, David Haines, Pennsylvania, *Salix Alba*.  
 Lafean, Edward Charles, Pennsylvania, *Aromatic Syrup of Rhubarb*.  
 Lammer, Jr., Francis Joseph, Pennsylvania, *Extracts*.  
 Lawrence, Samuel Comfort, New Jersey, *Permanganate of Potassium*.  
 Loewenthal, Wm. A., Indiana, *Medicated Wools*.  
 Loughead, Raymond Blythe, Pennsylvania, *Percolation*.  
 McBath, Wm. Andrew, Tennessee, *Syrup of Lactucarium*.  
 McCarthy, Cornelius Joseph, Pennsylvania, *Pharmaceutical Associations*.  
 McConnell, Charles Henry, Pennsylvania, *Coke*.  
 McCoy, Clarence Herbert, Illinois, *Assay of Cinchona*.  
 McFarland, Thaddeus Day, Ohio, *Fructus Lappæ*.  
 Mallon, James Peter, Pennsylvania, *Aniline a Test for Alcohol*.  
 Marbourg, John George, Pennsylvania, *Pepo*.  
 Maurer, George Bright, Pennsylvania, *Seeds*.  
 Means, Samuel Robert, Pennsylvania, *Arsenic*.  
 Meek, William Henry, Massachusetts, *Officinal Salts of Lithium*.  
 Medd, Henry, England, *Pharmacy in England*.  
 Melot, Irvin G., Pennsylvania, *Iodoform*.  
 Moesinger, Philip Pierre, Iowa, *Cinnamomum Camphora*.  
 Moffitt, Edward Thomas, Pennsylvania, *Xanthoxylon Fraxineum*.

- Moore, John Demuth, Pennsylvania, *Guilandia Bonduc*.  
Morrett, William Henry, Pennsylvania, *Trochisci Potassii Chloratis*.  
Morrison, James, Pennsylvania, *Suppositories*.  
Munson, James Harry, Pennsylvania, *Preparations of Yerba Santa*.  
Nebig, William George, Pennsylvania, *Menthol Pencils*.  
Neely, Charles Godfrey, Pennsylvania, *Trifolium Pratense*.  
Neil William Edgar, West Virginia, *Sophora Speciosa*.  
Oetinger, Albert, Pennsylvania, *Elixir Cinchonæ Calisayæ*.  
Ohl, William, Illinois, *Effect of Heat on Opium*.  
Pantzer, F. Will, Wisconsin, *Damiana*.  
Parrish, Cullistus Mitchell, Pennsylvania, *Phytolacca Decandra*.  
Pechin, Edward Vogan, Pennsylvania, *Vegetable Histology*.  
Pechin, George Joseph, Pennsylvania, *Fibre*.  
Pfaeffle, Robert William, Pennsylvania, *Spontaneous Change in Chemicals*.  
Poehner, Adolph Adam, Germany, *Belæ Fructus*.  
Post, Philip Van Riper, New Jersey, *Cimicifuga*.  
Prewett, Samuel Washington, Tennessee, *Gelatin*.  
Prickett, Frank W., Delaware, *Coccus*.  
Pritchett, Harrison Hartwell, Virginia, *A Retrospect*.  
Rambo, Samuel Lee, Ohio, *Bismuthi Subnitrus*.  
Reighter, Frank Clymer, Pennsylvania, *Euphorbia Pilulifera*.  
Rentschler, Jr., Charles, Pennsylvania, *Tobacco*.  
Ridington, William Augustus, Pennsylvania, *Conium Maculatum*.  
Risher, Harry Cook, Texas, *Castile Soap*.  
Roberts, Joseph Vanculin, Pennsylvania, *Chloral Hydrate*.  
Roseberry, John Mackey, New Jersey, *Percolators*.  
Rosenbaum, David, Indiana, *Plantago Major*.  
Savage, Thomas Albert, Pennsylvania, *Acidum Boricum*.  
Scarborough, Jr., George W., New Jersey, *Petrolatum*.  
Scull, Andrew Stewart, New Jersey, *Sanguinarine*.  
Shoemaker, George Washington, Pennsylvania, *Glucose*.  
Smith, Frank F., New York, *Cacao Butter*.  
Smith, Frank Luther, Iowa, *Antipyrine*.  
Spalding, Charles, Texas, *Starch*.  
Stager, Edwin Wesley, Pennsylvania, *Alcohol and its Origin*.  
Stahler, Harry Lincoln, Pennsylvania, *Asclepias Tuberosa*.  
Sunderland, Henry, Pennsylvania, *Fermentation*.  
Supplee, William Edward, Pennsylvania, *Senna*.  
Swanson, Charles Adolphus, New York, *Gossypium*.  
Thompson, George Washington, Pennsylvania, *Carboxylate of Cocaine*.  
Tidd, Harry, New Jersey, *Cochineal and Carmine*.  
Trout, Winfield Scott, Pennsylvania, *Syrupus Ferri Iodidi*.  
Vincent, Lorren Stiles, Michigan, *Musk*.  
Wagner, William Finley, Pennsylvania, *Phytolacca Decandra*.  
Ward, Christopher Columbus, New Jersey, *Hydrastis Canadensis*.  
Ward, Joseph Poletus, Alabama, *Iodum cum Petrolato*.  
Wayman, John Martin, West Virginia, *Aque*.  
Weck, Charles Erastus, Kansas, *Chloral Hydrate*.  
Wild, Charles Ferdinand, Pennsylvania, *Potassii Bromidum*.

Wilkinson, William John, Pennsylvania, *Glycerin*.  
 Williams, Joseph Pearson, Delaware, *Unguentum Zinci Oxidi*.  
 Wingender, Wendell Phillips, Pennsylvania, *Ergot*.  
 Yealy, James Frank, Pennsylvania, *Memory in Pharmacy*.  
 Young, Frank John, Michigan, *Equisetum Hyemale*.  
 Young, William Schrack, Pennsylvania, *Hydrargyrum c. Greta*.  
 Zieber, Paul, Pennsylvania, *Water as a Menstruum*.

In response to an invitation from the professors, a reunion of the graduating class with the officers and trustees of the college, took place in the museum on the evening of March 17th, when the Zeta-phi Society presented to Prof. Trimble a complete copy of Chambers' Encyclopædia, and to the Actuary, Thos. S. Wiegand, his well-executed portrait, and the Theta-delta-sigma Society presented Prof. Sadtler with a gold-headed cane.

The commencement took place at the Academy of Music on Thursday, March 18th, at noon. Although the Academy was not overcrowded, as is very generally the case on similar occasions when the exercises take place in the evening, the auditorium was comfortably filled with an audience evidently interested in the proceedings. The degree of Graduate in Pharmacy was conferred upon the successful candidates by the President of the College, Chas. Bullock. The recipient of the Procter prize, presented by Mr. C. Bullock, was C. E. Escott, and honorable mention was awarded to D. W. Cahill and J. L. Fisher, with the grade distinguished, and to T. J. Backes, M. H. Bickley, W. B. Cheney, A. D. Drew, W. G. Greenawalt, F. D. Hall, S. S. Jones and E. C. Lafean with the grade meritorious, as the general result of their examinations. The H. C. Lea prize, \$100 for the most meritorious work in connection with the thesis, was presented by Mr. W. J. Jenks to S. S. Jones. The materia medica prize for the best histological examination of an American plant—a Zentmayer microscope—was awarded to M. H. Bickley, with honorable mention of the labor done by H. A. Burkhart and A. H. Cohn. The John M. Maisch prize, offered by Mr. J. H. Redsecker to the candidate passing the best examinations in materia medica, followed by an examination of sections of drugs by means of the microscope, was presented by Mr. T. M. Perot to J. L. Fisher, honorable mention being accorded to W. E. Neil, H. H. Pritchett, L. E. Barlow, D. W. Cahill, C. E. Escott, R. C. Bicknell, T. J. Backes, M. H. Bickley, S. S. Jones, G. W. J. Hoffman, W. H. Davis, E. S. Craig and S. W. Prewett. The Pharmacy prize, a gold medal, was awarded to M. H. Bickley for a very handsome collection of pharmaceutical chemicals and galenical preparations made by himself. Mr. Robt. Shoemaker presented the Operative Pharmacy prize, \$25 offered by Mr. E. L. Boggs, of West Virginia, to F. D. Hall; and Mr. W. B. Thompson a fine prescription balance, offered by Mr. H. J. Maris for the best examination in theoretical pharmacy to A. D. Drew. Honorable mention was made in connection with the Pharmacy prize, of T. J. Backes, J. E. Buckley and J. M. Roseberry; and in connection with the Operative Pharmacy prize, of J. L. Fisher, E. C. Lafean and D. Rosenbaum. The recipient of the Chemistry prize for analytical work, a Troemner analytical balance, was C. E. Hewitt, with honorable mention of the work done by S. S. Jones, J. L. Fisher, D. W. Cahill, W. B. Cheney, C. H. McCoy and J. D. Moore.

The valedictory address was delivered by Prof. Maisch, and the exercises,

which were enlivened with music, as customary, closed with the distribution to the graduates of numerous presents sent by their friends. That the former custom of lavishing upon the successful candidates costly bouquets and baskets of flowers is evidently on the decline, should be stated in this connection; more useful and permanent gifts are doubtless more appropriate to an occasion which marks the introduction of the student into the ranks of their chosen profession.

*Alumni Association of the Philadelphia College of Pharmacy.*—The annual reception to the graduating class was held at Natatorium Hall on the evening of March 16th, this being the first time that the exercises were held outside of the college building, the halls of which having proved to be inadequate for the attendance on such occasions. The President, Howard B. French, Ph.G., presided. The Alumni gold medal and the usual certificates for the best examination in each branch were awarded. The annual oration was delivered by C. B. Lowe, Ph.G.; the class oration by J. E. Buckley, of Washington Territory; the class history by J. P. Williams, of Delaware; and the future of the class was discussed by the class prophet, C. H. McCoy, of Illinois. A new feature was the awarding of a prize for an extensive and handsome collection of indigenous plants, and of the quizmasters' prize for the best examination in the senior quiz class.

In addition to the work done for the college in the past, the Alumni Association has commenced to labor for the erection of a new building in front of the college halls, and more in keeping with the large dimensions and with the usefulness of the latter.

In the place of the retiring President, Wallace Procter, Ph.G., Class 1872, was elected presiding officer.

*The Albany College of Pharmacy* held its fifth commencement on the evening of March 1st, the graduating class numbering ten.

*Chicago College of Pharmacy.*—The nineteenth annual commencement exercises took place on the afternoon of February 4th, at the Grand Opera House, when President T. H. Patterson awarded the diploma of the College to sixty-eight graduates, including one lady. The Alumni banquet to the graduates took place on the same evening at the Palmer House.

*Maryland College of Pharmacy.*—The thirty-fourth annual commencement was held at the Grand Opera House on the afternoon of March 18th, the degree of Ph.G. being conferred by President Dr. Jos. Roberts upon the following twenty-eight candidates: Chas. Ammen, A. M. Binau, J. Emory Bond, Chas. B. Chapman, T. Wilber Chelf, W. A. Conway, Chas. C. Cook, W. M. Fouch, William Goodrich, C. L. B. Hines, Alfred Lapouraille, William Lentz, Oscar F. Leonhard, J. S. McFee, Howard D. Mills, Chas. H. Moore, T. J. V. Morris, Dietrich F. Onnen, Oscar E. Ross, A. Row, George Ruhl, George A. Ruths, John M. Scott, Clarence R. Shryer, Henry C. Spetzler, W. H. Stewart, Silas A. Updegraff, and C. H. Ware. The prizes, consisting of gold medals, were awarded: first prize to C. Ammen; second to C. L. B. Hines; third to J. S. McFee; Simon analytical prize to T. W. Chelf; Practical Pharmacy prize to S. A. Updegraff; and Junior prize to A. F. Whiteside.

## EDITORIAL DEPARTMENT.

*Alcoholic Beverages Disguised as Medicines.*—In a recent issue of the *Medical Record* we find the following:—

"That popular abomination known as 'Beef, Iron and Wine,' which is now sold so extensively, not only by druggists, but by tradesmen of various kinds, deserves a little special attention from the medical profession. It is an agreeable mixture to the sight and taste; its name is a triple combination of seductive mononyms; while, taken into the stomach, it acts as a gentle 'pick-up' to the worn and over-sensitive nerves of the ladies. It has, in consequence, become a popular if not a fashionable tippie, and is indiscriminately used to an extent that is, we believe, not entirely free from danger. Every medical man knows that the amount of actual beef or food in these various preparations is insignificant, and that it is the wine, after all, that makes them liked, and that leads so many persons to purchase their second bottle."

The abuse introduced many years ago with whisky pleasantly flavored with bitters and aromatics, and with gin recommended under various names as popular medicines, has been often the subject of reflection by those who feel more than a superficial interest in the progress of pharmacy and medicine. When the sale of these liquors, thinly disguised as medicines, began to be transferred, to a considerable extent, from the counter of the pharmacist and druggist to the store of the grocer and liquor dealer, it marked only their natural flow towards more congenial channels. The advent of so-called elegant pharmacy, with its pleasant elixirs and allied preparations, introduced another form of alcoholic beverages thinly veiled as tonic medicines, and physicians and pharmacists hastened to spread their use, the former by prescribing and the latter by purchasing and dispensing them. It was but the natural course of affairs that the sale of such pleasant drinks, after their medicinal reputation had been established, should be largely transferred to the patent medicine dealer, the grocer and others having no interest in pharmacy, and that in this way the pecuniary interest of both physician and pharmacist should be made to suffer, in addition to the evils that obviously are likely to follow the unrestrained use of such allurements.

While it would have been easier in the beginning to combat their spread of popularity, it seems to us that the ground lost may, to a considerable extent, be recovered by the physician avoiding to prescribe ready-made medicines, and instead thereof, formulating himself such combinations as may be adapted to his patients, and by the pharmacist in making an honest effort to supply the products of his own skill and labor, and to uphold to the fullest intent and purpose the formulas of the pharmacopœia, and where this authority is silent, the formulas elaborated and recognized by pharmaceutical associations. There can be no doubt that the national formulary of unofficial preparations contemplated by the American Pharmaceutical Association, may and should become a powerful aid towards mitigating some of the apparent evils if physicians and pharmacists will not neglect their professional duties.

*Pharmaceutical Legislation in Virginia.*—By an Act, approved March 3d, the Virginia Pharmaceutical Association has been incorporated and is empowered to nominate a number of its members from whom the governor is to select the Board of Pharmacy. The law provides for the registration of qualified phar-

macists in a manner similar to other laws, by recognizing the rights of those who have had three years' experience in dispensing stores, by accepting as evidence of qualification the diplomas from Colleges of Pharmacy recognized by the State Association and by the examination of other candidates. Section 3 confers upon practising physicians the right to retail, compound or dispense medicine or poisons, or to open or conduct a pharmacy, etc.; yet registration does not appear to be required of them, and Section 10 exempts them from the provisions of the Act if they do not keep open shop. The annual renewal of registration is provided for, the fee being \$1. The wilful adulteration or sale of adulterated drugs is made a misdemeanor, punishable by a fine not in excess of \$100, in addition to which the name of a guilty pharmacist may be stricken from the roll, while a similar additional penalty is not provided for merchants, who, without registration, may sell (Sect. 3) quinine, potassium iodide, bromide and chlorate, and certain other drugs and medicines. The registration of the sale of poisons is limited to arsenic and its preparations, corrosive sublimate, white precipitate, mercuric iodide, potassium cyanide, hydrocyanic acid, strychnine and essential oil of bitter almonds; while correct labeling is required for a number of poisons, ecobolic medicines and "other deadly poisons," without, however, defining what are to be regarded as "deadly poisons."

The Board was promptly appointed and organized in Richmond, March 25, by the election of T. Roberts Baker, Richmond, as President, and E. R. Beckwith, Petersburg, as Secretary; the other members are R. Brydon, Danville; E. Warfield, Alexandria, and J. W. Thomas, Jr., Norfolk.

A law regulating the sales of morphine in Virginia was approved March 1. It is similar to corresponding laws recently passed in some other states, and requires that the wrappers shall be of a scarlet color, and that the labels shall likewise be scarlet and plainly lettered in white. The intention of the law is evidently to make conspicuous the vessels containing morphine or its preparations in the possession of others than pharmacists or physicians, and including the latter when purchasing morphine in the state. Whether the details will be practicable and tend to prevent mistakes, remains to be seen.

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*Drug Business in Indianapolis for Sale.*—By reference to our advertising columns, we notice that the long established and favorably known wholesale and retail business of Messrs. Browning & Sloan, is offered for private sale during the present month.

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## OBITUARY.

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Joshua B. Lippincott died in Philadelphia, January 5th, at the age of 74 years. He was the founder of the publishing house now known as the J. B. Lippincott Company, which published a number of medical and pharmaceutical works.

Professor Austin Flint, M. D., died in New York, in the 74th year of his age. Educated at Amherst and Harvard, he held professorships in Chicago, Buffalo, Louisville, New Orleans, and, since 1861, in New York and Brooklyn. Dr. Flint was widely and favorably known as a medical author, both at home and

abroad, and he had been selected to preside over the International Medical Congress, which is expected to convene in Washington in 1887.

Notice of the death of the following graduates of the Philadelphia College of Pharmacy has been received:

James A. Armstrong, Ph.G. (1855), M. D., served in the army during the war as surgeon, and practised in Camden, N. J. for about 15 years, holding during a portion of this time the offices of coronor, inspector for the state board of health and examiner in pension cases. He died suddenly October 30, 1885.

Henry W. Maitland, Ph.G. (1884), died suddenly in Camden, N. J., January 7, 1886, aged 26 years.

Thomas Noble, Ph.G. (1858), served as hospital steward during the war, and was afterwards in the revenue service and in the gas office of Philadelphia. His death occurred December 27, 1885, at the age of 47 years.

## VARIETIES.

**TANNATE OF MERCURY** contains a large proportion of metallic mercury and possesses a pronounced metallic taste. A medium dose is 0.2-0.3 grams and 0.5 grams may be administered without any inconvenience. One advantage claimed for the tannate is that it produces no disturbance of the digestive track. Casanov employed the following formula:—Tannate of mercury, 3 grams; extract of liquorice, q.s.; divide into sixty pills. Two to be taken twice a day after food.—*Bull. gén. Thé.*, 1885.

**OLIVE OIL AS A MENSTRUUM FOR COCAINE** was recommended by Dr. Andrews, of New York, at a meeting of the American Ophthalmological Society. By the plan of dissolving cocaine in oil, longer contact of the remedy is insured, and a smaller quantity of it is required. Cocaine salts not being soluble in olive oil, the alkaloid should be used, only requiring a few minutes of gentle heating in a water-bath to dissolve it.

**EXTERNAL USE OF LOBELIA INFLATA.**—Dr. V. N. Reichard highly recommends the use of lobelia (*Medical Times*, December 12, 1885) as a local application for indolent sores, chronic erysipelas, and especially in incised wounds, in which latter class of cases it acts as a hæmostatic and astringent. The mode of employment of lobelia for this purpose in cases of incised wounds, no matter how great the hemorrhage, provided, however, it does not require a ligature, is to bring the edges of the wound together, and to hold them for a few moments, while a pledget of cotton, wet with tincture of lobelia, is applied. Dr. Reichard says that the hemorrhage will then cease and the parts adhere, and although lobelia may not be a germicide, it will so entirely close up a wound as to render it perfectly aseptic.—*South Med. Record*.